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Economic Growth or Continuing Stagnation? Estimating the GDP of Cyprus and Malta, 1921-1938

PhD in Economic History

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Abstract

This thesis explores the macro-economic history of Cyprus and Malta in the inter-war period. It constructs the first detailed estimates of output at aggregate and sector levels, enabling the analysis of economic growth and the sector structure of the islands' economies. It evaluates their performance within the context of economic change on Europe's South Eastern periphery and, specifically, in light of the experience of British colonial rule.

The thesis argues, first, that economic growth was slow in wider European comparison and as sluggish as in neighbouring countries. It was so despite the two islands' being far less exposed to the political upheavals of the First World War than most other economies in South Eastern Europe. Second, the proximate reasons for their comparatively weak growth performance differed: Cyprus experienced a prolonged agricultural crisis, but participated in the post-depression recovery through the growth in international demand for the output of its copper mining industry. Malta's growth was slower than Cyprus due to the combination of declining British military expenditure and the population increasing faster than previously.

These differences notwithstanding, the islands were ultimately affected by common problems. Their small overall size had a negative effect on their performance as global protectionism increased and restricted export opportunities. In addition, the colonial governments remained committed to balanced budgets and non-intervention in the economy, limiting their ability to combat the effects of the great depression. As a result, the deteriorating economic situation increased the political tension between the islanders and the colonial governments. The reluctance to mount an effective policy response to the great depression acted as a catalyst to political polarization, leading to violence and the suspension of the islands' constitutions.

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Table of Contents

Figures and Tables

Chapter 1: Introduction and Historiography

"Size is not necessarily a very useful index of the stage of economic growth of a country; still, because the Island is small, people have often felt that its potential is limited."[1]

Purpose and aims

The economic history of Cyprus and Malta, especially during the tumultuous interwar period, has not been adequately researched. Historians have mostly focused on the islands' political conflicts, while economists stayed away from the development history due to the lack of publicly available data for any period before 1950. The limited research on the interwar period has been based on unprocessed primary data and accounts of contemporary colonial officials. The lack of a more thorough quantitative analysis of their economies led to historical interpretations remaining unchallenged[2].

The thesis provides new quantitative evidence on the economic performance of Cyprus and Malta and compares the two British colonies growth record with that of *independent* states of Southern Europe. Pamuk and Williamson assure us that, with the exception of Mandated Palestine, the performance of Mediterranean economies was poor, with the colonial governments of the region being more reluctant to intervene in economic issues than the governments of independent states[3]. In order to evaluate whether Cyprus and Malta had the same fate as their neighbours, Gross Domestic Product (GDP) estimates have been constructed for the period 1921 to 1938. The new GDP estimates serve to indicate whether the islands were typical lacklustre performers or non-typical success stories. This is important, as along with Gibraltar, Cyprus and Malta were the last British colonies in Europe during a period of state creation after the collapse of the continental empires. These new national entities were capable of formulating independent economic policies while Malta and Cyprus remained under British control. Thus while independent governments were taking increasing control of their economies, Malta and Cyprus stood out as areas under direct, rather than indirect, British influence in Europe.

[1] Hald, M.W., *A Study of the Cyprus Economy*, (Bellapais: 1968), p.1.
[2] Hill, G., *A History of Cyprus: Volume IV*, (Cambridge: Cambridge University Press, 1952), p.34; Georghallides, G.S., *A Political and Administrative History of Cyprus* (Nicosia: Cyprus Research Centre, 1979); Fenech, D., *Responsibility and Power in Inter-war Malta. Book One: Endemic Democracy 1919-1930* (San Gwann: PEG Ltd, 2005).
[3] Metzer, J., "Economic Growth and External Trade in Mandatory Palestine: a Special Mediterranean Case" in Pamuk, Ş. & Williamson, J, *The Mediterranean Response to Globalisation* (London and New York: Routledge, 2000), p.364; Pamuk & Williamson, *The Mediterranean Response…*, (2000), p.63.

By combining extensive evidence into GDP estimates, the islands' performance will enable insights into issues that affected British colonies, as well as issues that affected small island economies during a period of global volatility, rising protectionism and economic crisis. By understanding the reasons driving their performance and comparing them with autonomous Southern European states, it is possible to evaluate the economic policies of colonial states in the interwar period.

The estimation of GDP will bridge a substantial gap in the economic history of the islands. Despite their geographical size, Cyprus and Malta have received substantial scholarly interest in their history; however research has been focused on political rather than economic issues, thus leaving their economic history under-researched. Yet, the political relationships between the islands' inhabitants and their British overlords were shaped by the economic performance of the islands, and thus the islands economic history can provide fresh insights to the political relationship of the inhabitants with the British.

All these questions can be better considered by quantifying the economic effects on the islands. In estimating GDP through the reconstruction of Historical National Accounts (HNAs), one attempts to "measure magnitudes [of growth] in terms of… modern systems of ends, means and values" in order to better understand the economic conditions of the time[4]. Thus a fresh impetus is provided to historical issues through the quantification of the economic conditions of the period[5]. GDP estimation requires a quantitative evaluation of all sectors of the economy and their combination into a single indicator of economic progress. This allows for an economic analysis of Malta and Cyprus at aggregate and sector levels, enabling a greater understanding of the economies and the reasons behind their performance. The colonial office in London frequently compared and contrasted the situation in Malta and Cyprus, since decisions about the islands were often made by the same persons back in London[6]. The islands are studied together here in order to differentiate the general factors underlying their performance from island-specific reasons: this helps assessing the more general impacts of colonialism and of economic size, while acknowledging the effects of island-specific issues.

After the Second World War Cyprus and Malta were similar in having rapid economic growth, but they had very different de-colonisation experiences. Understanding their economic development

[4] Kuznets, S., *Modern Economic Growth: Rate, Structure and Spread*, (New Haven & London: Yale University Press, 1966), p.23.
[5] Maddison, A., *The World Economy: A Millennial Perspective*, (Paris: OECD, 2001), p.45.
[6] An example of such common concerns was the concern of the "niggardly treatment of Cyprus" when considering the issue of financing the King's Own Malta Regiment. National Archives, London. File: CO158/414, Lord Milner to Churchill, 10 October 1919

during the interwar period enables a greater understanding of the prerequisites of successful growth. The new GDP estimates for the period 1921–1938 allow a longer term perspective on their growth performance, and make it possible to evaluate how much of the post-1945 rapid growth was due to interwar developments.

The islands were not predicted to have successful economic development on the eve of their independence from Britain in the 1960s. Mayer stated that the Cypriot economy would be a 'copra–boat' economy, depended on being the main British military base in the Middle East. He believed that independence would result in economic decline, since "Cyprus will contain a million people, a fact best appreciated by those who have lived on an aircraft carrier"[7]. The UN was also concerned about the island's prospects reporting that after independence "the Cyprus Economy…seemed to be running along a downhill and rather bumpy road"[8]. A similar sentiment was shared by Balogh and Seers on the prospects of the Maltese economy; after the Second World War, Malta was superseded as a British military base by Cyprus which had no significant military forces stationed there previously. Balogh and Seers concluded that the decline of military expenditure in Malta would lead to long-term economic decline[9].

The development of the islands in the past fifty years has refuted such predictions. In 2004, Cyprus and Malta joined the European Union having already converged to 82.8% and 69.2% of the per capita GDP of European Union members. Indeed, Cyprus had a higher per capita GDP at entry than Greece and Portugal who had been members and significant beneficiaries of the community for more than two decades[10]. The rapid convergence of Cyprus and Malta to European income levels took place despite having much lower starting levels of per capita GDP than either Portugal or Greece in the 1950s. Their development was so rapid that Cyprus and Malta achieved one of the highest annual average growth of GDP in Europe during the period 1950–2003[11].

[7] Mayer, A.J., *Middle Eastern Capitalism: Nine Essays*, (Cambridge, MA: Harvard University Press, 1959) p.48-50; the population was a gross overestimate since the estimated population in 2007 was less than a million.
[8] Thorp, W.L., *Cyprus. Suggestions for a Development Programme*, (New York, United Nations, 1961), p.5.
[9] Balogh, T., & Seers, D., *The Economic Problems of Malta: An Interim Report*, (Malta: GPO, 1955), p.viii; The State of Malta is actually an archipelago which is comprised of Malta, Gozo, Comino, and Comineto. Unless specifically mentioned otherwise, the term Malta is used to represent the whole archipelago.
[10] Source: Eurostat, *GDP per Capita in Purchasing Power Standard*, http://epp.eurostat.cec.eu.int/ as consulted 10 Mar 2006.
[11] Source: The Conference Board and Groningen Growth and Development Centre, *Total Economy Database*, http://www.conference-board.org/economics as consulted 20 Oct 2008; Heston, A., Summers, R. & Aten, B., "The International Comparison of Prices Program (ICP), Version 6.1" *Penn World Tables* (Pennsylvania, PA: CICUP, 2002) http://pwt.econ.upenn.edu/icp.html as consulted 20 Jun 2007. Based on both databases the annual average of the last fifty years, Cyprus and Malta, along with Spain, were the top three growth performers in Europe.

Their rapid economic growth is particularly noteworthy if one considers the exogenous shocks faced by both islands. Cyprus was convulsed by almost continual conflict during the period 1955-1974: the Greek-Cypriot demand for union with Greece resulted in a rebellion against British rule in 1955, which led to inter-communal conflict between Greek-Cypriots and Turkish-Cypriots by 1958. The island was declared a republic in 1960, but in 1963 inter-communal conflict broke out again, with the Turkish Cypriots withdrawing into armed enclaves, leading to incidents of sporadic violence until 1974[12]. In that year the Turkish army invaded after a Greek-Cypriot coup (assisted by the Greek junta) against the Greek-Cypriot president. The invasion led to forced population exchanges and the occupation of 40% of the area of the Republic of Cyprus, an occupation which continues to this day. The coup and the subsequent invasion caused serious damage to the economy of to the Republic of Cyprus, particularly since the majority of the tourist infrastructure remained inaccessible within the Turkish occupied area[13]. Despite the grievous economic blow of the occupation, the Republic of Cyprus exhibited great resilience. Remarkably, the economy recovered to its 1973 levels of per capita GDP just four years after Turkey's intervention. This rapid recovery took place despite the fact that over 30% of the population was displaced and that the occupied area used to produce 70% of output[14]. The recovery is even more remarkable as it took place at a period when the golden era of European growth was ending, with oil price shocks creating strains for non-oil producing economies, such as Cyprus[15].

Malta has also been successful in weaning itself away from dependence on British military expenditure despite the bleak prognosis by experts[16]. Malta was the central military base for Britain in the Mediterranean before the Second World War, but the advances in military aviation led to its exposure to heavy and sustained bombing during the war[17]. As a result of the bombing, Malta's strategic importance as the main British naval base between England and the Far East was questioned. The decision to reduce British military presence after the Suez crisis debacle in 1956

[12] After 1963 the Republic of Cyprus represented all communities except the Turkish-Cypriots who set up their own representative communities.

[13] Eteocleous, S., "Economic Achievements" in Charalambous, J. & Georghallides, G., (eds.) *Focus on Cyprus*, (London: North London University, 1993), pp.71–86, p.75.

[14] Republic of Cyprus, *Statistical Pocket Book No.2: The Cyprus Economy in Figures (1950–1978) and Main Socio-Economic Indicators*, (Nicosia: Statistics and Research Department, 1980) p.4. The Turkish-Cypriots are not included in most datasets of the Republic of Cyprus from 1963 onwards.

[15] Crafts, N.F.R., "The Great Boom: 1950-1973" in Schulze, M., (ed.) *Western Europe: Economic and Social Change since 1945*, (London: Longman, 1998), pp.42-62, p.48; Crafts, N.F.R, "The Golden Age of Economic Growth in Europe, 1950-1973" *The Economic History Review*, Vol.48, No.3, (1995), pp. 429–444, p.429, p.436.

[16] The UN technical support team feared a 15% decrease of national income with the cessation of Military spending in the 1960s; however, growth continued despite the withdrawal of British forces in 1979. Bonnano, N.S., *Capital, Accumulation and Economic Growth: In Theory and as They Relate in the Maltese Paradigm*, (Fribourg: University of Fribourg, 1989), p.30, pp.131-133.

[17] It is estimated that Malta suffered as many as ten tons of bombs per family during the Second World War. Castillo, D., *The Maltese Cross: a Strategic History of Malta*, (Westport: Praeger Security International, 2006) p.217

marked a rapid reduction of British military expenditure in Malta, with predictions that the economy would be in freefall[18]. However, Malta was supported by substantial foreign aid in order to successfully develop its economy and it is a now a hub for ICT, tourism and light manufacturing. In fact Malta has been able to maintain rapid economic growth even after the closing of the last foreign military base on its territory. Despite the pessimism about their future development, both islands have been relatively successful in converging to the income levels of mainland Europe after the Second World War, but how much was their success due to interwar developments is unknown.

Historians who were primarily interested in the political history of the islands devoted parts of their analysis to the interwar economic conditions, but the main focus of their research was on political and not economic matters[19]. Their work was based on contemporary opinion and primary data sources, but with little systematic analysis. No attempt has been made to analyse the substantial primary material within a framework that would allow comparisons over time and across countries. As a result of the scattered nature of the data the interwar period was ignored in economic analysis, with most economists concentrating on the period after the Second World War due to greater availability of national accounting data[20]. Thus there is a knowledge gap in the islands' economic history: with the exception of Jenness' work on the pre-1914 economic development of Cyprus, written as long ago as 1962, knowledge of the islands' economic history is limited[21]. The quantification of the islands' interwar output allows us to assess their performance within the broader context of European economic history.

Ideally, one would construct yearly GDP estimates for the period 1914–1949 in order to link up to existing estimates and create an annual series for the past century. However, such an undertaking would have been beyond the efforts of one individual as it would entail heavy archival research. Thus this attempt focused on the economic development of the islands for the period 1921–1938, for which we know very little. These years were very important in the political history of Cyprus and Malta, because it was then that the relationship between the islands and their colonial overlord was permanently altered.

The 1920s brought several significant constitutional changes on the islands, as Britain sought to diffuse the democratic and nationalistic aspirations of the Cypriots and Maltese. The attempt to

[18] Metwally, M.M., *Structure and Performance of the Maltese Economy*, (Malta: Aquilina & Co, 1977), p.xi.
[19] Examples include: Georghallides. *A Political…*; Fenech, D., *Responsibility and Power*.
[20] Examples include: Wilson, R., *Cyprus and the International Economy*, (New York: St. Martin's Press, 1992); Malta Labour Party, *The Maltese Economy*, (Hamrun: Malta Labour Party, 2001).
[21] Jenness, D., *The Economics of Cyprus: A Survey to 1914*, (Montreal: McGill University Press, 1962).

placate such demands with new constitutions failed, as both colonies suffered violence that led to the suspension of their constitutions by the end of 1931. Yet, research on the political grievances of the period does not adequately take into account the worsening economic conditions of interwar Europe when considering how the increasing political tension led to violence[22]. The new GDP estimates open the way towards a better understanding on how the political disturbances on the islands were related to the economic conditions prevailing during the great depression, as analysed in chapter 8 of this thesis.

The effect an economy's size on economic growth has been debated since the establishment of national income accounting and it is still divisive. For some, small size is an advantage for a nation, especially during turbulent economic conditions. Kuznets, a pioneer of the national accounting method, argued that small states could have high and stable income levels through exceptional natural resource endowments or due to their dependence on an external power[23]. Easterly and Kray have argued that to be a small state in the second half of the 20th century is to "have small problems" since small states have a higher per capita income than larger states, and do not seem to suffer a growth disadvantage[24]. Mellinger *et al.* indicate that small island states have advantages to offset disadvantages of geographical location, since Hong Kong and Singapore are currently the only high income economies in the world located in the tropical zone[25].

Kuznet's argument of small state income stability was relevant to the two islands during the interwar period. Malta was dependent on British military expenditure, but this thesis indicates that stable income through great power dependence could have negative consequences, limiting economic growth. The importance of Malta as a military port arose from the natural harbours of the island and the presence of the Royal Navy Dockyard. Military expenditure made substantial direct and indirect contributions to the island's income, yet such transfers were not without their disadvantages[26]. Cyprus was not important in military terms during the interwar period, and became important as a British military base only after the Second World War. However, during the interwar

[22] Such as: Fenech, *Responsibility and Power…*, (2005); Georghallides, G.S., *Cyprus and the Governorship of Sir Ronald Storrs: The Causes of the 1931 Crisis,* (Nicosia: Cyprus Research Centre, 1985).
[23] Kuznets, S., "Economic Growth of Small Nations" in Robinson, E.A.G. *Economic Consequences of the Size of Nations*, (London: Macmillan, 1960), p.14; Kuznets, *Modern…*, (1966), p.488.
[24] Easterly, W. & Kray, A., "Small States, Small Problems? Income, Growth and Volatility in Small States" *World Development*, Vol.28, No.11, (2000), pp.2013-2027, p.2014.
[25] Mellinger, A.D., Sachs, J.D. & Gallup, J.C., "Climate, Coastal Proximity and Development", Chapter 9 in Clark, G.L., Feldman, M.P. & Gertler, M.S. (Eds.) *Oxford Handbook of Economic Geography*, (Oxford & New York: Oxford University Press, 2000), p.170.
[26] Fenech, *Responsibility and Power…*, (2005), p.8, p.140, p.227; Bonnano, *Capital Accumulation…* (1989) pp.32-33, p.126; Balogh, & Seers, *The Economic Problems of Malta* (1955), p.i.

period, large copper sulphate deposits were discovered and exploited in Cyprus, but the effects of copper exploitation have not been previously quantified.

Others argue that small economic size is an economic disadvantage. States like Malta and Cyprus suffer from higher transaction costs in freight transport and the possibility to embrace technology is limited owing to a low threshold to economies of scale[27]. It has also been argued that small states are more vulnerable to large exogenous shocks which can destabilise their economies, leading to growth retardation and sudden changes in disposable income, with substantial negative welfare effects[28]. Guillaumont argues that the disadvantages of a small state also exist in terms of economic policy as the welfare of the citizens of a small state is vulnerable to factors over which that state has little or no control[29]. Small states are more vulnerable to the economic effects of environmental disasters and trade shocks, since they are usually dependent on exporting a very narrow range of products[30]. As a result, indexes devised to measure economic vulnerability indicate small island states as the most vulnerable[31]. The economic analysis of these small islands during one of the most volatile periods in European economic history indicate that Cyprus and Malta were at a disadvantage due to their small economic size.

Evidence from the second half of the 20th century indicates that small countries such as Cyprus and Malta were not the most vulnerable to exogenous asymmetric shocks. Cyprus and Malta have achieved high living standards despite serious exogenous shocks to their economies[32]. The perceived small state disadvantages have not prevented several small island states from achieving high levels of per capita GDP: Singapore, Malta and Cyprus are examples that a high level of aggregate income is possible, while Iceland indicates how vulnerable small islands are to sudden reductions of income. One does not need to see the possible advantages and disadvantages as contradictory; to paraphrase Krugman, there could be a range of conditions under which small

[27] Briguglio, L. & Eliawony J.K., "Introduction" in Briguglio, L. & Eliawony, J.K., (eds.) *Economic Vulnerability and Resilience of Small States*, (Blata l-Bajda: Islands and Small States Institute, 2004), p.17.
[28] World Bank, "What Makes Small States Different?" http://wbln0018.worldbank.org/html/smallstates.nsf as consulted 12 Dec 2007; Briguglio & Eliawony *Economic Vulnerability…*, (2004), pp.44-45.
[29] Guillaumont, P., "On the Economic Vulnerability of Low Income Countries" in Briguglio, & Eliawony, *Economic Vulnerability…*, (2004), pp.54-55.
[30] Briguglio, "Economic Vulnerability and Resilience: Concepts and Measurements" in Briguglio & Eliawony, *Economic Vulnerability…*, (2004), p.33.
[31] Briguglio, L., "The Vulnerability Index and Small Island Developing States: A Review of Conceptual and Methodological Issues", http://home.um.edu.mt/islands/vulnerability_paper_sep03.pdf (2003), as consulted 10 Oct 2006; Guillaumont, "On the Economic…", (2004), pp.63-64; Briguglio & Eliawony, *Economic Vulnerability…*, (2004), p.45; Briguglio, L. & Galea, V., "Updating and Augmenting the Economic Vulnerability Index", *Occasional Paper of the Islands and Small States Institute of the University of Malta*, (2003) http://home.um.edu.mt/islands/eviar_briguglio_galea_ver4.pdf as consulted 20 Dec 2007, p.8.
[32] Such as the Turkish invasion of Cyprus and the removal of British military expenditure in Malta discussed above.

states can achieve high levels of income, but centripetal disadvantages outside their control mean that this might not be achieved[33].

Overview of the islands' economic history

An overview of the islands' economic history identifies the appropriate themes and perspectives to undertake the analysis of the GDP estimates. Since Cyprus and Malta have received limited coverage in the literature, key themes and development in the economic history of other Mediterranean states can provide useful insights. Prior to the 19th century, most states on the Mediterranean developed a dual economic structure: an enclave of a "modern" productive sector that was sensitive to world prices, surrounded by a "traditional" subsistence sector[34]. Valerio argues that this two-tier economic system was particularly evident in Mediterranean island economies as foreign overlords imposed export oriented production directed to European markets, while the rest of the economy remained based on traditional working patterns[35].

Cyprus followed this pattern: foreign overlords introduced export crops without disturbing the traditional nature of the rest of the economy. Cash crops for European markets were established in Cyprus in the 14th century by the Lusignan Kings and the major landowners, the Knights Hospitallers, but it was restricted to the areas directly under their feudal control. Lusignan Cyprus was considered one of the wealthiest domains in Southern Europe, exporting textiles and farming goods: some of those farming products were still important exports in 1921[36].

By the time the island passed under Venetian control in 1489, it had lost much of its prosperity, partly due to the conflict between the Lusignans and the Genoese. Under the Venetians the central Mesaoria plain was converted to grain production for export to Venice, as wheat was an important necessity. In addition substantial investment in farming infrastructure took place; irrigation channels established during the Venetian period were still used in 1921, although by then the island had

[33] Paraphrasing Krugman's argument of core-periphery; Krugman, P., "Where in the World is the 'New Economic Geography?'", Chapter 3 in Clark, Feldman & Gertler (Eds.), *Oxford Handbook…*, (2000), p.54

[34] Kostis, K. & Petmetzas, S., (eds.) *Η Ανάπτυξη της Ελληνικής Οικονομίας κατα το 19ο Αιώνα 1830 – 1914* [The growth of the Greek Economy during the 19th Century], (Athens: Alexandria, 2006), p.25 Kostis, K., & Petmetzas, S., "Growth and Stagnation in the Greek Economy 1830–1940" http://www.ims.forth.gr/ims/history_studies/agrotiki_oikonomia/GreekEconomy.pdf as consulted 12 Nov 2007, p.37.

[35] Valério, N., "Some Remarks about Growth and Stagnation in the Mediterranean World in the XIXth and XXth Centuries" *The Journal of European Economic History*, (1992) vol.21 no.1 pp.121-134, p.125; Lewis, A. "Development and Distribution" in Caircross, A. & Puri, M. (eds.) *Employment, Income Distribution and Development Strategy* (London: Macmillan, 1976) pp.25-42.

[36] Jenness, *The Economics of Cyprus* (1962) p.23.

ceased to be a net exporter of grain[37]. Cypriots were heavily taxed and the Orthodox Church was suppressed further, leading in a failed revolt in 1562.

In 1571 the island was conquered by the Ottoman Empire after a particularly brutal campaign, where the main port city of Famagusta was ravaged by a prolonged siege; the Battle of Lepanto was the culmination of the long delayed expedition to save the island. The incorporation of Cyprus into Ottoman Empire seems to have had negative economic effects: the island was ravaged by war and was now in isolation from the lucrative East-West trade. Serfdom was partially abolished but the substantial investment in infrastructure initiated by the Venetians did not continue, leading to economic malaise and population decline. The population of Cyprus only managed to recover to its Venetian levels in the mid-19th century, as the Ottoman Empire opened up to European trade, leading to the re-emergence of cash crop agriculture in Cyprus[38]. The European demand for cotton, wine and animal fodder resulted in a modest economic recovery in Cyprus during the last years of Ottoman rule[39].

Cyprus was occupied by the British in 1878; under the Cyprus Convention the island remained nominally under Ottoman suzerainty but all power was transferred to the British High Commissioner[40]. The change did not lead to a rapid modernisation of the outdated administration system: despite some improvement of the judicial system and the introduction of a limited constitution, the emphasis of the British administration was in maintaining the status quo and not in transforming the Ottoman system[41].

The lack of administrative modernisation was in part due to the heavy tax burden imposed on Cyprus due to the British occupation. An annual payment of £92,799 sterling, known as the Turkish 'Tribute', was supposed to be commuted to the Sultan in lieu of the lost tax revenue from Cyprus. Although this amount was not a tribute but a payment of forgone tax revenues, it was labelled erroneously by the press as the 'Turkish Tribute'. The British administration raised most of the 'tribute' from taxation in Cyprus, but the Ottoman government did not receive it as the British Treasury used the money to pay interest to the shareholders of the defaulted 1855 Ottoman loan, which it had guaranteed. Thus to the dismay of most Cypriots, a significant proportion of the yearly

[37] Hill, G. *A History of Cyprus: Volume III* (Cambridge: Cambridge University Press, 1948), pp.813-814; Lanitis, N.C., *Rural Indebtedness and Agricultural Co-operation in Cyprus* (Limassol: C. Nicolaou & Sons, 1944; Revised 1992), p.12
[38] Hill. *A History of Cyprus* (1952), p.34
[39] Cyprus' principal export was fodder such as locust beans (also known as carob beans).
[40] Hill. *A History of Cyprus* (1952) p.412 ; Georghallides. *A Political…,* (1979) p.11.
[41] Hill. *A History of Cyprus* (1952) p.35. Georghallides. *A Political…* (1979) p.34

tax revenue was transferred to the British Treasury, with no gain for the island. The 'tribute' expropriated all the surplus of government revenue resulting in "the government machinery... run[ing] on a low current"[42].After insistent protests the 'tribute' was partially reduced by a permanent grant-in-aid of £50,000 in 1907; yet £42,799 of the 'tribute' remained a burden to government expenditure until 1927[43].

Cyprus remained a British protectorate until 1914, when it was annexed with the declaration of hostilities against the Ottoman Empire; it was then formally declared a British crown colony in 1925[44]. Despite the annexation of Cyprus, the 'tribute' was still debited from Cypriot government expenditure even after the Cyprus convention was annulled. Thus, the 'tribute' was seen as a severe constraint to development by Cypriots and British Governors of Cyprus[45].

In October 1931 mass riots erupted throughout Cyprus leading to violence and the destruction of the Governor's residence. Such events were unprecedented in the history of British Cyprus: the island was so trouble free that when the riots took place there was only one under-strength infantry company to suppress them[46]. The colonial government quelled the riots by rushing military reinforcements from Egypt and subsequently it abolished the constitution and restricted personal and press freedoms[47]. The abolition of the legislative council eliminated elected Cypriot representation under British rule at a national level, as only mayoral elections were allowed until the declaration of independence in 1960. The relationship between the Greek-Cypriots and the British was never the same again. From 1931 until independence the political discourse between British governors and Greek-Cypriot politicians was dominated by animosity: the conflict of 1931 set the stage for the anti-colonial war of 1955[48].

[42] Georghallides, *Cyprus and the Governorship…*(1985) p.181
[43] Georghallides. *A Political…* (1979) p.36; Georghallides, *Cyprus and the Governorship…*(1985) p.57
[44] The Annexation of Cyprus (on the 5th November, 1914) was confirmed by Turkey in the Treaty of Lausanne (6th August, 1924). The status of the island was formally determined as a Crown Colony on the 1st May, 1925, and on the same day the UK High Commissioner assumed the title of Governor. Source: National Archives, London. File: FO 371/123881,"Cyprus"
[45]Over the period 1878–1927, Cyprus sent £2,646,648 to the British treasury while receiving aid for development projects of £200,000: Georghallides. *A Political…*(1979) pp.18–21; Georghallides, G.S. *Cyprus and the Governorship…* (1985) p.24,p.26; Meredith, D. "The British Government and Colonial Economic Policy, 1919-39", *The Economic History Review* Vol. 28, No. 3, (1975) pp. 484-499
[46] Georghallides, *Cyprus and the Governorship…* (1985) p.703
[47] For a description of the events in 1931: Command 4045, "Disturbances in Cyprus in October 1931" *British Parliamentary Papers. Reports from Commissioners, Inspectors and Others: vol.VI session 03/11/1931 to 17/11/1931* pp.504–544
[48] Holland R., & Markides, D. *The British and the Hellenes: Struggles for Mastery in the Eastern Mediterranean 1850-1960* (Oxford: Oxford University Press 2008), p.214

The cause of the riots is contested in Cypriot historiography. The colonial government insisted that they were entirely due to the economic distress of the population, caused by the global trade conditions[49]. Greek-Cypriot historians argue that the riots were motivated by nationalistic sentiment, since their immediate cause were protests for union with Greece[50]. Thus there is a debate on whether the violence in October 1931 was motivated by economic frustration or nationalistic sentiment. This thesis argues that the economic situation during the depression and the inaction of the colonial government flamed the nationalistic aspirations, as analysed in depth in chapter 8.

Malta exhibited a very different economic structure to Cyprus. Because of its strategic position, Malta was also ruled by foreign powers throughout most of its history. However the geography of the Maltese islands is very different than that of Cyprus: the Maltese islands are much smaller, with an area of just 316 km^2 [51]. In addition the ground is rocky and quite barren, and the island has no endowment other than its natural harbours. Because of these limitations, Maltese development has been linked with its value as a maritime base to foreign powers.

The establishment of the Knights Hospitallers on the island and their success in withstanding the Ottoman siege of 1565 transformed the island's fortunes. The knights fortified the islands of Malta and based their naval fleet in the Grand Harbour and Marsamxett, the natural harbours around their newly constructed capital of Valletta. The influx of military expenditure allowed the population to expand far beyond the subsistence levels dictated by local agriculture. Thus since the sixteenth century the population of Malta depended on military expenditure from the ruling power for its sustenance[52]. Most supplies came from abroad, with the Maltese farmers providing an ever declining share of foodstuffs for the cities around the Grand Harbour.

One cannot underestimate the transformation of the island under the order of the Knights Hospitallers. The new capital, Valletta, was constructed and extensively fortified at great expense, becoming a centre of religious art, military engineering and medicine. The knights left behind a legacy of strong military fortifications and religious fervour as well as a paternalistic tradition of caring for the sick, having established a university that trained Maltese physicians. The island also became an entrepôt of east-west trade and a base for Christian corsairs, while the rural community

[49] Command 4045, "Disturbances in Cyprus in October 1931" (1931) p.504.
[50] Georghallides. *Cyprus and the Governorship…* (1985), p.695-699
[51] Thus the combined land area of the Maltese archipelago is smaller than the Gaza strip. Cyprus' area is 9251 km^2 and is marginally smaller than Lebanon.
[52] Metwally, *Structure and Performance…* (1977), p.6

was integrated with the European market, making cotton twist for the Spanish market[53]. The knights focused their spending in Valletta and the naval dockyard in the Grand Harbour, thus making the area the nucleus of Malta's economy[54].

Malta's dependence on substantial defence expenditure inflows led to economic decline as the order's finances began to dry up during the 18th century. The knights' finances collapsed as the reduction of church power in Europe, combined with the French revolution, robbed the order from most of its income: as the inflow of foreign expenditure dried out, the population of Malta stalled.

In 1798 Napoleon, en route to Egypt, ended the long rule of the Knights Hospitallers. However, the French occupation was brief: Britain removed the French garrison in 1800 with the help of a local rebellion and the Maltese islands were guaranteed as a British possession by the Treaty of Paris in 1814. For Britain, the occupation of Malta ensured a naval base and a fortress against other Mediterranean powers, allowing it to project its power to the Middle East. The predominance of British military considerations in the occupation of Malta was emphasised by the fact that even in 1938 the commander-in-chief stationed in Malta was also the island's governor[55]. For the British, Malta was first and foremost seen as a fortress.

The occupation of Malta rejuvenated the inflow of military expenditure as Britain sought to continue the fortification program conceived by the Knights. New defence lines were constructed, while the Royal Navy improved the existing dockyard, making the Grand Harbour its principal Mediterranean base. As defence expenditure increased, the island became increasingly dependent on it: a negative consequence of the increased importance of the defence expenditure was the decline of the local cotton industry[56]. By 1935 the department of British overseas trade stated that "the presence of the [armed] services is a dominant factor in the economic and social life of the island"[57].

Malta's dependence on military expenditure meant that the economy did well in times of war and badly in times of peace, as economic growth was dependent on the number of British ships

[53] Charlton. W.A., "Trends in the Economic Geography of Malta since 1800" (University of Durham, PhD Thesis, 1960), pp.29-30
[54] Castillo, *The Maltese Cross* (2006) p.82
[55] Fenech. *Responsibility and Power…* (2005) p.24
[56] Charlton. "Trends in the Economic…" (1960) p.23, pp.29-30, p.45
[57] Greaves. J.B. *Report on Economic Conditions in Cyprus and Malta*, (London, Department of Overseas Trade, HMSO, 1935), p.37

stationed in the Grand Harbour[58]. The dependence of Malta on Royal Navy expenditure peaked during the interwar period as capital ships reached their peak sizes, thus compensating for the reduction of army personnel after the First World War.

The dependence on military expenditure resulted in violent cycles of economic expansion and contraction caused by political events outside Malta's control. The second half of the 19th century led to unprecedented economic expansion: the Crimean war increased British defence expenditure while Malta also became an important coaling station for steamships on their way to and from the Suez Canal[59]. Yet, by the beginning of the 20th century the importance of Malta as a coaling station declined due to competition from neighbouring countries and improved steamboat technology that made frequent stops unnecessary[60]. This coincided with the end of substantial military infrastructure construction on the island in 1905, leading to a significant reduction of defence expenditure inflows. As a result the island went through a prolonged period of economic distress that was only dispelled with the outbreak of the First World War[61].

The First World War was a mixed blessing for the Maltese islands. The war increased military expenditure as it was the principal base of supply for the Gallipoli and Balkan campaigns. Yet, the rising expenditure and declining shipping space lead to labour shortages and rapid inflation as the island depended on imports. Shipping losses during the war meant that inflation continued even after the end of the war, while military expenditure was reduced as British demobilisation kicked in. The Maltese labour in the Royal Navy Dockyard was reduced by half in 1919, while the Mediterranean fleet did not return to its Maltese station until after 1922. This led to a sudden reduction of income for many Maltese during a time of rapidly rising prices. The effects of demobilisation were serious, with the Governor stating that "many of the workers [were] indeed fighting off starvation"[62].

In June 1919 there was a riot in Valletta with some casualties: the riot was anti-British and had nationalistic overtones, with the Maltese crowd demanding political autonomy[63]. The official report blamed the riots on the unfavourable condition of the working classes rather than on Maltese

[58] Charlton. "Trends in the Economic…" (1960) p.164
[59] Bonnano. *Capital Accumulation…* (1989) pp.10-11
[60] Charlton. "Trends in the Economic…" (1960) p.73
[61] Command 6090, "Finances, economic position and judicial procedure: Report of the royal commission on the finances economic position and judicial procedure of Malta 1912-1913" *British Parliamentary Papers*
[62] Governor Robertson as quoted in Bonnano. *Capital Accumulation…* (1989) p.38, p.15
[63] Castillo. *The Maltese Cross* (2006) p.142; Command 2150, "Report of the Royal Commission on the Constitution of Malta" *British Parliamentary Papers. Reports from Commissioners, Inspectors and Others: Vol. VI session 03/11/1931 to 17/11/1931* pp. 803 -1043, p.83; Fenech. *Responsibility and Power…* (2005) p.140, 250

irredentism: the reduction of the Maltese workforce in the dockyard, combined with the rising prices, created substantial discontent against the colonial authorities[64]. Feelings of displeasure towards the British government were partly due to the dockyard not providing out-of-work pay to the discharged dockyard workers, unlike standard practise in the UK.

After the riots a grant-in-aid of £250,000 was extended by Britain to Malta to lessen the shock of demilitarization. Bonnano states that the efforts of the British administration to alleviate the economic crisis were relatively successful: public works were constructed that led to "a certain degree of economic prosperity"[65]. Yet, the most important effect of the riot was to convince the colonial office to provide limited self-rule to Malta, in the hope that Maltese politicians would take the responsibility for the island's development[66].

The new constitution was implemented in 1921, and it introduced a system of dual governance. The constitution provided for a Maltese tiered assembly who would elect a prime minister and cabinet. They would be responsible for all matters that the British considered domestic, while all issues of foreign policy and the military were controlled by the commander-in-chief who was also the British Governor. The experiment of dual governance proved unsuccessful as the constitution was suspended due to escalating violence during the run up to the 1930 elections.

By the mid-1930s the strategic benefits of Malta were being challenged: the island's importance as a naval base was undermined by the growth of airpower. The increasing sophistication of military aircraft made the British fleet in Malta vulnerable to air attack just as naval ships reached their peak size. During the Abyssinia crisis, when war with Italy seemed imminent, the Royal Navy was concerned that Malta was within reach of Italian aircraft. Thus in August 1935 it was decided to move to Alexandria, with grave economic consequences for Malta in 1936[67]. Although the fleet returned in 1937, it served a warning; in the future, Malta could not depend for its prosperity on foreign military expenditure.

The economic situation facing Europe in the interwar period was one of "chaos, crisis and catastrophe" as the map of Europe was reshaped after the collapse of the continental empires of

[64] Command 2150, "Report of the Royal Commission..." (1931), p.836.
[65] Bonnano. *Capital Accumulation…* (1989) pp.15-16
[66] Fenech. *Responsibility and Power…* (2005), p.41
[67] Pratt. L.R. *East of Malta, West of Suez: Britain's Mediterranean Crisis 1936–1939* (Cambridge, Cambridge University Press, 1975) pp.120-121

Turkey, Russia and Austria-Hungary[68]. Interwar conditions were not conducive to accelerated growth in peripheral countries: global trade stagnated, international finance was in crisis and most European countries faced periods of hyperinflation and debt-default. The problems were especially severe in the South-European periphery since it was still suffering from a backlog of problems that were not resolved before the First World War. South-Eastern Europe was effectively at war from 1911, a war which was only effectively concluded in 1923; at its conclusion several new states were created, which placed further barriers to trade. In addition the reduction of agricultural prices vis-à-vis other products made the economic growth very difficult as these countries were dependent on agricultural exports. These further difficulties, combined with the slow growth of international trade, made rapid economic growth in Southern Europe problematic; per capita GDP growth was slower than the European centre, leading to further economic divergence from advanced European countries [69].

However, new estimates of per capita GDP for the South-Eastern states indicate that these states managed to sustain quite rapid GDP growth, but the accelerated population growth deflated per capita GDP[70]. As a result the income gap between advanced European countries and Southern European did increase, but only because of the substantial expansion of their population. The increase of population was in part due to forced population exchanges between the new states after the First World War.

The development level of Cyprus and Malta, relative to states, such as Turkey, Greece or Bulgaria, is unclear. Illiteracy was high in Malta and Cyprus, with Malta having one of the highest illiteracy rates in Europe: over 60.8% of the population could not read or write as compared to 46.1% in Cyprus. The high illiteracy in Malta was peculiar since Malta is not a rural nation: over 61.5% of the population in 1931 lived in urban or suburban areas[71]. Cyprus had better literacy rates despite having a low urbanisation rate of 18.8% in 1931[72]. According to Aldcroft, a high proportion of primary materials and semi-manufactures to total exports is an indicator of underdevelopment, and

[68] Feinstein. C.H., Temin. P. & Toniolo. G. *The European Economy Between the Wars,* (Oxford: Oxford University Press, 1997) p.1

[69] Aldcroft. D.H., *Studies in the Interwar European Economy,* (Aldershot: Ashgate, 1997) p.165;

[70] Pamuk. Ş., "Estimating Economic Growth in the Middle East since 1820", *Journal of Economic History*, Vol.66, No.3 (2006) pp.809-828, p.824; Kostelenos, G., *et al*, *Ακαθάριστο Εγχώριο Προϊόν 1830 – 1939* [GNP 1830-1939] (KEPE & IAETE, Αθήνα, 2007), p.202; Anotniou, A., Athanassiou, E., Kostelenos, G., "Economic Growth in Greece 1833-1939: A Tentative Endogenous Growth Approach" *International Workshop on Modern Economic Growth and Distribution in Asia, Latin America and the European Periphery* (2001); Ivanov, M., *Bulgarian National Income between 1892 and 1924*, (Unpublished, 2007), p.9

[71] Malta, *Census of the Maltese Islands 1931* (Valletta, GPO, 1932) p.5

[72] Hart-Davis, C.H. *Cyprus Report of the Census of 1931* (Nicosia: Passingham, 1932). Urbanization was still low in 1946, with just 21.6% living in towns and suburban villages in 1946. Source: Percival, D.A. *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947) p.2

an overwhelming percentage of both islands' exports fell in these two categories[73]. Using the new GDP series constructed here, the per capita GDP of Malta and Cyprus is found to be similar to Bulgaria as explained in detail in chapter 3 of this thesis.

Historians and interwar commentators had mixed views on the economic outlook of Cyprus during the interwar period. They can be divided into optimists and pessimists, as their opinions have been coloured by issues of nationalism. Colonial administrators argued that Cyprus was better off under British rule than under the Ottomans, or if united with Greece[74]. In their opinion, Cyprus did develop significantly in the interwar years as indicated by the expansion of the road network and the creation of a dynamic mining industry. Sir Ronald Storrs, governor of Cyprus from 1926, was upbeat about the economic conditions on the island even in 1931, despite the effects of the depression[75]. Storrs maintained that his government initiated more development projects than previous administrators, the 'tribute' was abolished, an agricultural bank was established, the co-operative movement was expanded; thus he felt that Cyprus was progressing economically on the basis of his reforms. Greaves corroborated these views, but argued that Cyprus was still "essentially a near eastern country in the standard of living, though it is improving, is still, according to western ideas, generally low"[76].

Other contemporary observers seem to think that the economic conditions in Cyprus were poor, with the rural majority facing a serious agricultural crisis, particularly during the great depression. Under pressure by the legislative council, a rural survey was commissioned in order to evaluate the living conditions of the rural population[77]. Surridge found the situation dire, with up to 25% of the rural population below his poverty line and the majority in debt to moneylenders[78].

The Cyprus government in the 1930s found itself in constant budget deficits that exhausted its limited reserves. This troubled the colonial office, which commissioned a report on the economic conditions of Cyprus, published in 1935. The report was very pessimistic about the future economic growth of Cyprus. For Oakden the agricultural situation was the critical deterrent of progress: saddled with insurmountable debts, farmers were unable to afford capital investment to raise their productivity. The possibility of increasing exports looked grim since the principal markets of Egypt and Greece were increasingly protectionist and world prices of agricultural products remained

[73] Aldrcoft, *Studies in the Interwar…*(1997) p.165
[74] Hill, *A History…Vol. 4* (1952) p. X
[75] Georghallides, *Cyprus and the Governorship*...(1985) p.544
[76] Greaves, *Report on Economic Conditions…*(1935) p.2
[77] Surridge, B.J. *A Survey of Rural Life in Cyprus*, (Nicosia, GPO, 1930) p.7
[78] Ibid. p.32

low[79]. Oakden's conclusion was categorical: "I see no hope of a speedy return to the conditions prevailing before the depression"[80].

It seems now clear that the prolonged drought that hit Cyprus during the great depression had a grave effect on Cypriot farmers. The drought hit the farmers in 1931, when they were already under pressure by the rapid decline in farming goods' prices. The lack of rain was consecutive, leading to the failure of many crops: rainfall in 1931-32 and 1932-1933 was under 70% of the average, while the rains in 1933-1934 were just between 71%-80%[81]. Thus, as global agricultural prices were declining, the yield of Cypriot agricultural products collapsed due to the lack of sufficient water. The combined decline in output and prices led to a collapse in the value of output; this especially affected grain farmers of the plain around Nicosia, who were completely dependent on rainfall. Oakden wanted increased protectionism to aid these grain farmers: the inclusion of Cyprus in the imperial tariff system did not help, since the increase of duty towards cheap Italian and French flour led to its replacement by Canadian flour and not to the increase in the use of Cypriot flour.[82].

Hill, in his seminal work on the history of Cyprus, argues the "remarkable progress which has been made" on what it was no longer fair to call a "Cinderella colony"[83]. Hill displayed measured optimism and admits that the British did not fully capitalise on the economic opportunities of Cyprus. Nevertheless, the economic conditions improved due to the administration being less corrupt than the Ottomans: yet, Cyprus could have been a developmental success story earlier if the 'tribute', taxation reform and the agricultural crisis were tackled by the British administration prior to the Second World War[84].

Kesner is upbeat about the British period, arguing that "few imperial undertakings more readily exemplify the role of pragmatism in Britain's response to imperial problems than British efforts to improve the economic conditions on the island of Cyprus"[85]. For Kesner, the development expectations of the Cypriot population were unrealistic; Britain kept their vague obligation of development without overburdening British resources. He agrees that 'tribute' was initially a heavy

[79] Oakden, R., *Report on the Finances and Economic Resources of Cyprus,* (London: Crown Agents for the Colonies, 1935), p.15
[80] Ibid. p.25
[81] Source: Meteorological Service of Cyprus, *Το Κλίμα της Κύπρου* [The Climate of Cyprus], http://www.moa.gov.cy/moa/ms/ms.nsf/dmlcyclimate_gr/dmlcyclimate_gr?opendocument&print as consulted 23 Jan 2008.
[82] Oakden, *Report on the Finances* (1935) pp. 160-162
[83] Hill, *A History…Vol. IV* (1952) p. IX
[84] Ibid. p.460-469
[85] Kesner, R.M., "Britain and the Rehabilitation of the Cyprus Economy" *The Journal of European Economic History* vol.7 no.1 (1978) pp.169–190, p.169

burden to the economy of Cyprus, constituting 9.5% of total income in 1896, but Kesner argues that this was partially alleviated from 1907 onwards, releasing funds for investment projects[86]. The colonial government induced development even if some projects did not achieve their desired outcomes; the disappointment felt by the population was due to unrealistic expectations rather than administrative shortcomings[87].

Georghallides is much more pessimistic on the economic development of Cyprus during the interwar period. According to Georghallides, the British administration failed to transform Cyprus since "the country remained economically backward, without… facilities for the great majority of the people, the rural population"[88]. He argues that Cypriots had concrete and valid plans how to develop the island and how to solve the agricultural crisis that was plaguing Cyprus, but the recalcitrant stance of the colonial government checked the island's development. For him, Cyprus would have been better off if the government listened to the Cypriot representatives; none of the critical problems of Cyprus were resolved by the administration, and even colonial officials in London were aware of the colonial administration's failure[89]. Even when the government attempted to encourage economic development through irrigation investment and by establishing the Agricultural Bank, the results were dire due to poor planning. For Georghallides, Cypriots did not have unrealistic expectations, as claimed by Kesner; it was the inefficiency of the colonial government that led to slow economic growth[90]. Wilson seems to agree with Georghallides, stating that "overall, in economic terms, the results of the British occupation [in 1878] must be seen as disappointing in the early years"[91].

Lanitis, focusing mainly on the agricultural sector of Cyprus, argues that the agricultural sector in the interwar period was largely stagnant, and that "the amount of progress that has been recorded either since the beginning of this [the 20th] century or even since 1918 is indeed negligible"[92]. For Lanitis, it was not until 1936 that economic conditions in Cyprus showed a marked improvement[93].

Christodoulou focused on the post-1945 period, but has significant sections on the interwar period. He agrees with Georghallides as for the backwardness of the island. While acknowledging that the

[86] Ibid. pp.171-172; The estimate of the burden of the tribute is based on Fairfield estimated income of £981,900 in 1896.
[87] Kesner, "Britain and the Rehabilitation…" (1978) p.180 p.184
[88] Georghallides, *A Political…* (1979) p.185
[89] Georghallides, *Cyprus and the Governorship*...(1985) p.137
[90] Ibid. p.181
[91] Wilson, R., "The Economic Development of Cyprus Under the British, 1878–1960" in Aerts, E., and Valério, N. *Growth and Stagnation in the Mediterranean World* (Leuven: Leuven University Press, 1990), pp.8-25, p.24
[92] Lanitis, *Rural Indebtedness…* (1944; revised 1992) p.10
[93] Ibid. pp.39-40

improvements of transport infrastructure during the interwar period helped sustain rapid post-War growth, for Christodoulou "the Cyprus Miracle" lays squarely in the post-1945 period[94].

Mayer with Vassiliou was primarily interested in planning for the development of Cyprus after its independence in 1960, but he argues that the Cypriot economy was permanently transformed by the growth of the copper mining industry. The Cyprus Mines Corporation (CMC) put in place the necessary investment in the 1930s to allow for an impressive expansion of output during the 1950s, when copper prices were soaring[95]. In addition the period 1935-1938 saw the expansion and re-organisation of the village co-operative scheme under a separate department of co-operative development. These co-operatives were pivotal for growth in the 1950s as they aided the financing, packaging and marketing of agricultural products produced by the mainly rural population of the island[96]. Thus for Mayer with Vassiliou, the period 1921–1938 laid the foundation for future growth by setting in place infrastructure improvements which formed a basis for development after the end of the Second World War.

Lavender analysed the development of the CMC and was positive about the British occupation of Cyprus. He believed that the British occupation of the island meant that "for the first time in their history the Cypriots found a foreign overlord who evinced interest in their well-being", stressing the improvements in infrastructure (roads, irrigation and harbours) as well as in agriculture and forestry[97]. For Lavender the growth of the copper mining industry lifted Cyprus out of poverty; the industry became the largest exporter by 1925, replacing the staple agricultural exports which had suffered price reversals. Lavender sees the 1920s as a period of moderate growth for the copper mining sector, with growth being reversed in the great depression as the large mines of Skouriotissa and Mavrovouni closed temporarily in 1931 and 1933, before recovering and undergoing significant expansion until the start of the Second World War[98].

The most recent attempts to qualitatively evaluate the standard of living of Cyprus during the interwar period are by Angelides and by Brey. Angelides argues that the standard of living remained very low since Cyprus was still overwhelmingly rural in nature[99]. Brey is more optimistic,

[94] Christodoulou, D., *Inside the Cyprus Miracle: the Labours of an Embattled Mini-economy*, (Minneapolis: University of Minnesota, 1992) p.xxi, p.127, p.74
[95] Mayer, A.J., with Vassiliou, S., *The Economy of Cyprus* (Cambridge, MA: Harvard University Press, 1962) p.11
[96] Ibid. p.32
[97] Lavender, D. *The Story of Cyprus Mines Corporation* (San Marino, CA: The Huntington Library, 1962) p.60.
[98] Ibid. p.241, 263, p.266
[99] Angelides, S., "The Cyprus Economy Under British Rule (1878 – 1960)" in Karageorghis, V. & Michaelides, D. (eds.) *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day* (Nicosia: University of Cyprus, 1996) p. 214

stating that the changes implemented by the British in terms of facilities and administration transformed the Cypriot economy sometime in the 1930s[100]. However, both Brey and Angelides relied on qualitative information or post-1945 secondary sources; they did not attempt to make a quantitative analysis based on the very substantial amount of primary data available for the period.

Many interwar commentators regarded Malta's development prospects with pessimism, arguing that its population was far larger than its limited domestic resources; thus for Greaves the greatest problem was "how to maintain and provide useful economic activities for her people"[101]. Emigration was considered as the best policy in improving the standard of living of the Maltese population. An emigration department was established early in the interwar period in order to provide training for potential emigrants, but it was not considered a success, since emigration was restricted by the potentially receiving countries of the new world.

Historians argue that British defence expenditure impacted most households either directly or indirectly through increased demand for consumer products. Fenech argues that British military expenditure was so pivotal to the well-being of the Maltese that it created an "addictive reliance", both at a personal and national level[102]. The 1931 census estimated British military personnel and their family dependents as 8.55% of the population, with 14,670 men serving on the ships of the Royal Navy[103]. The importance of the Royal Navy led to the majority of military expenditure was being spent in Valletta, and the 'three cities' of Cospicua, Vittoriosa, and Senglea, situated around the Grand Harbour. This area had the Royal Navy Dockyard and the navy's victualling yards, and hence received the lion's share of infrastructure improvements and public expenditure[104]. Despite the overwhelming importance of Royal Navy expenditure, Bonnano and Abela argue that the self-government was successful in promoting economic diversification projects, but this thesis argues that the success was limited, as discussed in chapter 6[105].

[100] Hansjörg, B., "The Cypriot Economy Under British Rule and the Economic Heritage of the British Period" in Faustman, H. & Peristianis, N. *Britain in Cyprus: Colonialism and Post-Colonialism 1878 – 2006* (Biliopolis: Mannheim & Möhnesee, 2006) p.431–445, p.431, p.441

[101] Greaves. *Report on Economic Conditions…*(1935) p.38. The population rate for Malta and Gozo was 1844 persons per square mile. Source: Malta, *Census... 1931,* (1932)

[102] Fenech, *Responsibility and Power…*(2005) p.8

[103] Source: Malta, *Census…1931* (1932)

[104] In Valletta a sanitary system was established, and a power station constructed in 1894: Bonnano, *Capital Accumulation…* (1989) p.12

[105] Bonnano, *Capital…*(1989) p.125; Abela, M., *Malta, A Developing Economy* (Malta, Central Office of Statistics, 1963) p.3

Conclusion

Despite Malta and Cyprus' success of maintaining high rates of GDP growth in the second half of the 20th century, no research has been undertaken to evaluate their performance between 1900 and 1950. The thesis attempts to bridge the gap by providing GDP estimates for the period 1921-1938. This will enable the evaluation of the islands' development through a longer perspective in order to see whether the prerequisites to rapid growth were achieved prior to the start of the Second World War. In addition, the islands are to be compared with their European neighbours to establish the economic effects of being British colonies in Europe. This will enable a general comparison of different policies initiated during the great depression and evaluate their results vis-à-vis independent states. The fact that Cyprus and Malta were small economies will also be evaluated to see whether size was a help or hindrance during the interwar period. The period 1921-1938 was particularly important politically: it was during this period that the fundamental political relationship with Britain was challenged, and that their constitutions were suspended. The serious economic turmoil of the period had an impact on the political relations between the colonial authorities and the local people that has not been previously analysed.

The historiography seems to suggest that Malta was developing at a satisfactory rate but it is unclear whether this progress was due to the increase of its dependence on the British military. Opinions on Cyprus are divided between those who see the colonial regime positively and those who consider the colonial administration as the architect of the island's misfortune.

The methodology of the first comprehensive estimates of GDP is explained in chapter 2. Chapter 3 provides the results for the aggregate economy. Chapters 4, 5, 6 and 7 analyse the results for each sector, while chapter 8 evaluates the role of government and the interaction between the economic situation and the developing political conflicts.

Chapter 2: Research Methodology

"We are led to the conclusion that in the framework of historical national accounts there is a greater tolerance for errors than for similar series that relate to current national statistical magnitudes… in constructing historical national accounts from scratch, one is expressing his conviction that it is better to have such series rather than the series not exist at all."[1]

Introduction to historical national accounting

There have been attempts to estimate national income from the late 17th century[2]. Their aim was comparative, as they sought to establish the relative prosperity of one nation vis-à-vis another[3]. Methodological progress was slow until after the First World War, but during the interwar period national accounts were constructed in several countries[4]. The estimates were not comparable to each other because the diversity of estimation procedures made comparison difficult. It was becoming increasingly clear that the methodological diversity restricted efforts to secure cross-country comparability.

In an effort to introduce comparability, the International Association of Income and Wealth (IAIW) was established. The IAIW focused on creating a standardised international nomenclature in order to improve comparability, and in creating national accounts for more countries. By 1953 a general nomenclature and methodology had been adopted by the United Nations in order for member countries to estimate their income. These national accounting principles, collectively known as the System of National Accounts (SNA), have since been extensively revised in 1968 and 2003 and are the basis of national account creation today[5]. The creation of national accounts based on SNA practices enabled comparative research as it enabled economists to search for the reasons rather than for the evidence of economic growth [6].

For pioneers of GDP estimation such as Kuznets and Lindhal, the creation of historical national accounts backwards was equally important in order to explain the past development. In their opinion the creation of historical national accounts (HNAs) was the key to help answer why the United States of America managed to develop into a high income economy while Latin American

[1] Translated by the author: Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προϊόν* (2007), pp.24-25
[2] Van Ark, B. "Towards European National Accounts", *Scandinavian Economic History Review* Vol. XLIII, No.1 (1995) pp.3–16, p.3; Maddison, A., *Monitoring the World Economy 1820–1995*, (OECD: Paris, 1995) p.118
[3] Vanoli, A. *A History of National Accounting* (Amsterdam: IOS Press, 2005), p.5
[4] Van Ark, "Towards European..." (1995), pp.3-4; Vanoli, *A History of National…* (2005) p.26
[5] Vanoli, *A History of National…*(2005) p.90, p.105
[6] Maddison, *Monitoring the World Economy* (1995), pp.118–119; Christensen, J. P., Hjerppe, R. & Krantz, O. " Nordic National Accounts since the 1880s" *Scandinavian Economic History Review* Vol. XLIII, No.1 (1995) pp.30-52, p.38

countries floundered[7]. Hjerpe argues that HNAs, "have proved invaluable in the reconsideration of industrialisation and in other analyses of economic and social development"[8]. Thus estimation of GDP is not an aim in itself, but historical GDP provides a powerful analytical tool to help understand long-term economic growth[9].

The problem in creating historical national accounts is data and data quality. The variation in the quality of written records varies from country to country, and from one historical period to another; thus no homogenised system of HNAs has been developed to replicate the United Nations' SNA for current GDP estimation. Despite this, most European states have constructed HNAs, and efforts to improve them and harmonize them are ongoing[10]. This thesis is the first attempt to estimate HNAs based on primary data for Cyprus and Malta. As a result its focus is to collect and collate information from primary sources within a national accounting framework, while being transparent in method, thus allowing subsequent revisions as more primary evidence becomes available.

The creation of HNAs is fraught with difficulties not experienced by statistical offices involved in estimating current GDP. The estimation is based on historical sources: the researcher cannot ask the economic agents for the information directly, while sometimes important pieces of information are missing, incomplete or damaged. Even when the relevant information is found in archives it will often have been written down in a form that is not necessarily useful to the researcher. For example there might be information measured on units of weights, volumes, and currencies but the amount measured by a unit has since been altered, or some information might only be provided in aggregate with no description of how it was collected. As a result creating HNAs in order to estimate GDP is an exercise of compromise between methodological robustness and data quality.

[7] Maddison, *Monitoring the World Economy* (1995) pp.118–119.
[8] Hjerpe, R. "Understanding Economic Development Through Historical National Accounts" in Grytten, O.H. (ed.), *Nordic Historical National Accounts Proceedings of Workshop, IV* (Bergen: NHH, 1998) pp.81–pp.97, p.81
[9] Smits, J. "Historical National Accounts: Where do we go from Here?" in Gudmundur, J. *Nordic Historical National Accounts: Proceedings of Workshop VI* (Reykjavik: University of Iceland, 2003) pp.9-32, p.12, p.15, p.21
[10] Van Ark, "Towards European…(1995), p.5

National accounting practices in Cyprus and Malta

The first GDP estimate for Cyprus was made for 1950 and was constructed using the output approach, tacking information from censuses of employment, production and agriculture[11]. In 1959 the GDP estimates for the period 1950-1959 were revised to incorporate the findings of the first input–output table[12]. The establishment of the republic of Cyprus in 1960 resulted in periodic revisions in order to adhere to SNA practices. However, it is unclear if all GDP estimates were revised to the newer standards. The Republic of Cyprus has brought its current statistical compilations to the level demanded by the European System of Accounts (ESA 1995), the national accounts nomenclature of the European Union[13]. Unfortunately, the statistical office has no plans to revise previous estimates of GDP to the ESA standard leading to methodological inconsistency within the GDP series[14].

The first GDP estimate for Malta was constructed in 1954 using just income and expenditure method, but not through the output approach[15]. The adoption of SNA practices remained incomplete in Malta until 2004, when Malta adopted the ESA 1995 in order to join the European Union[16]. The estimation of GDP through the output approach led to the discovery that the income and expenditure method miss-estimated the GDP level, creating a political controversy that still resonates in Malta today[17]. Unfortunately, the statistical office has no plans to revise previous GDP estimates, resulting to even greater methodological inconsistencies within the Maltese GDP series than in Cyprus.[18].

[11] Cyprus, *National Income, Product, Expenditure 1950* (Nicosia: Statistics Section, Secretariat, 1951). There are three approaches in estimating GDP: output, income and expenditure. They refer to the information used to estimate the domestic product, which needs to equal the domestic income and domestic expenditure.
[12] Republic of Cyprus, *History and Analysis of the Methodology of National Accounts in Cyprus* (Nicosia: Ministry of Finance, 1977) pp.2-3; Vassiliou, S. *Input–Output Analysis of the Economy of Cyprus* (Cambridge, Ma: Harvard University Press, 1959)
[13] The European System of Accounts 1995 (ESA 1995) is based on the SNA 1993, but it is more robust in order to satisfy stricter European needs for comparability.
[14] Statistical Service of Cyprus, *Description of the Sources and Methods Used to Compile Non-financial National Accounts*, (Nicosia: Statistical Service, 2000) p.4
[15] Balogh, & Seers, *The Economic Problems…*(1955), Appendix
[16] National Statistics Office: Malta, National Accounts (Old System) http://www.nso.gov.mt/site/page.aspx?pageid=57 as consulted 8 May 2006. The output approach is considered the most accurate of the three methods.
[17] The Head of the National Statistical Office resigned: Vella, M. "Cordina quits NSO as pressure gets to him" *Malta Today*, 7 January 2007
[18] Statistical Service of Cyprus, *Description of the Sources and Methods…* (2000) p.4

Previous historical estimates

Despite the fact that this is the first attempt to estimate the GDP using national accounts methodology for the interwar period, there have been previous spot estimates of the income of Cyprus and Malta. Without making his methods known, Fairfield estimated the total income of Cyprus in 1896 as £981,900 sterling, of which £176,000 was collected by the government through taxation[19].

The Cypriot population continued to complain of excessive taxation and as a result, following a request by the legislative council, a committee was set up in 1930 to evaluate the tax burden of the population[20]. The committee members argued that "it is manifestly next to impossible in the absence of proper statistics to arrive at an accurate estimate". Nevertheless they estimated the total income for 1927 as £3,500,000 Cyprus pounds, over 48% less than the thesis estimate in 1938 constant prices[21]. The committee's attempts to estimate output were admirable but their underestimate is unsurprising. The members did not have the necessary knowledge to correctly define and calculate the output of Cyprus and as a result it cannot be used as a reliable income estimate. It did not estimate the output of the whole economy as many sectors were omitted, and it failed to understand the nature of stock and flow concepts: capital stock (such as livestock) is included as an income measure while other flows (such as meat production) were not part of income. Further the committee was not aware of issues of double counting, thus unintentionally inflating their estimate. Christodoulou estimated the income of Cyprus in 1930 as £2.8 million Cyprus pounds, 46.7% less than the thesis[22]. Christodoulou did not reveal his methodology: in all probability his estimate was based on the flawed estimates for 1927.

Clark evaluated Malta and Cyprus as being in different GDP per capita bands to each other[23]. Writing in 1940, Clark considered Malta's per capita income as comparable to Italy's, Finland's, Hungary's and Greece's. Cyprus was in the lower income band along with Turkey, Syria, Bulgaria, Romania and Albania[24]. Although Clark's income bands were too wide to be very useful in estimating the GDP of Cyprus and Malta in the interwar period, his work suggests that the GDP per

[19] As quoted by Georghallides G.S. *A Political…*(1979) p.21
[20] Cyprus, *Report of the Commission Appointed to Enquire into the System of Taxation in Cyprus* (Nicosia: GPO, 1930) p.5
[21] Source: Ibid. paragraph 6. The thesis estimate for 1927 (in 1938 constant prices) was £4,678,897; while the committees estimate in 1938 prices was £2,431,107.
[22] Source: Appendix B; Christodoulou, *Inside the Cyprus Miracle* (1992) p.xxxi; converted to 1938 prices using CPI was £2,615,781. The thesis estimate for 1927 (in 1938 constant prices) was £4,911,844.
[23] Direct estimates comparable to my own cannot be extrapolated as the income levels were estimated in an unknown composite currency. Clark. C., *The Conditions of Economic Progress* (London: Macmillan, 1940) p.56
[24] Ibid.

capita level of Malta was substantially higher than that of Cyprus, which is contrary to the purchasing power parity comparisons presented in chapter 3.

Maddison estimated the joint GDP of Cyprus and Malta for 1929. It is not possible to separate the joint output into the constituent national parts because the national population and income levels used were not recorded by Maddison. The estimation procedure is also unclear and it would seem Maddison also thought the result as unreliable: the joint Malta/Cyprus remained part of Maddison's "non-sample" estimates that were not included in his estimates of global GDP[25]. Maddison's research interest was to calculate a global estimate and not in creating exhaustive HNAs for all countries; as a result Cyprus and Malta were not at the top of his priorities. In subsequent revisions of his work, Maddison has merged the joint estimate of Cyprus and Malta within the set of "Small Western European Countries". This category contains a joint estimate for 13 European countries, which are significantly diverse in terms of economic structure, geographical location and growth performance; it includes Malta, Cyprus, Iceland, Andorra and Luxembourg. A breakdown of population and income per country is not provided, and therefore an extrapolation of the GDP of Cyprus and Malta is not possible[26].

The joint Cyprus/Malta estimate placed the per capita GDP of the islands in 1929 below that of Greece and above that of Portugal. The hierarchy is identical to their relative per capita GDP in the 1960s; this is not a coincidence since the estimation was not based on interwar sources. In order to estimate the GDP in 1929, Maddison extrapolated backwards from the income estimates for Cyprus/Malta in the 1960s. Output was extrapolated backwards by assuming that the growth of Cyprus/Malta was equal to the average growth of Southern European states and Ireland. Thus the estimate for Malta/Cyprus is based on the growth record of other countries: it was not an attempt to create HNAs for the islands[27]. Although such results might be justified in cases where information is not available for HNA construction, ample primary data allow for better estimates to be created[28].

[25] The joint per capita GDP level was GK$1727 (1990 Geary-Khamis dollars). Maddison, *Monitoring the World Economy* (1995) p.224

[26] Maddison, *Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD,* http://www.ggdc.net/maddison as accessed 9 March 2009

[27] Maddison estimated the difference between the GDP level of Cyprus/Malta and the GDP level of southern Europe (the average GDP level of Ireland, Greece, Portugal and Spain), for 1950. Finding that the per capita GDP of Cyprus/Malta was 20% lower than the Southern European average, Maddison then extrapolated the islands' GDP for 1929 by calculating the average GDP of the same few countries by maintaining a 20% income differential. Source: Maddison, *Monitoring the World Economy* (1995) pp.214-215

[28] Maddison's estimates do not follow the post-war growth pattern of Cyprus and Malta. Instead they argue that Malta/Cyprus grew as fast as Southern Europe + Ireland in 1950-1973, and faster in 1973-1990. This is contrary to the estimates from the islands' statistical offices, the Penn World Tables and the Groningen Total Economy Database which all concur that during the period 1950 – 1973 both islands grew faster than the Southern European average. Sources: Republic of Cyprus, *Statistical Pocket Book: No.2…*(1980); Heston, Summers, & Aten *Penn World Table* (2006); Groningen Growth and Development Centre, *Total Economy Database*, (2006)

The need for comparable methodology

The creation of GDP is based on established best practices in national accounting in order to achieve international comparability. The methodology used is based as close as possible on the current methodology used in the European Union, the ESA 1995. Any deviation from best practice was due by data constraints; in such cases the general principles established in European HNAs research were used as a guiding principle[29]. GDP was produced as much a possible through the output approach, disaggregated to industries. When data was limited, such as the output of most of the service sector, the value added of the industry was estimated from the income side[30]. Data scarcity limited the available price deflators due to the lack of price data[31].

The service sector used to be estimated on the basis of multiplying the labour force employed in the service sector by its wage and in effect assuming productivity is constant; this was used in the thesis for some service industries due to the lack of additional data[32]. Yet the importance of the service sector has been highlighted recently and thus there have been greater efforts for more accurate measures of output[33]. Where sufficient data was available, such as in the Cypriot banking sector, value added was calculated as suggested in the 1995 ESA[34].

The production possibility frontier of recorded output followed ESA 1995 practices, which includes production for home use but excludes household chores. However, rigid adherence to ESA rules was not always possible or desirable in establishing the output of Cyprus and Malta during the interwar period as the nomenclature intended for modern economies might be inappropriate for an economy in the 1920s[35]. As a result industries were classified with the most recent nomenclature with one alteration: on-farm food processing was assigned to the agricultural rather than the manufacturing sector, because in the 1920s this was rural and not part of the industrial sector[36].

[29] Christensen, Hjerppe, & Krantz "Nordic National Accounts..." (1995), p.48
[30] For a detailed explanation of the European System of Accounts see: Eurostat, *European System of Accounts: ESA 1995*, (Luxembourg, Eurostat, 1996)
[31] Smits, "Measuring the Wealth and Poverty …" (2006), p.2
[32] Smits, "Measuring the Wealth and Poverty…(2006), p.4 p.6
[33] Van Ark, "Towards European...", (1995) p.11
[34] Lequiller, F. & Blades, D. *Understanding National Accounts* (Paris: OECD, 2006) pp.104–107. For a thorough review of measuring the output of services see: Krantz, "Service in historical national accounts" (1994), pp.19-41
[35] Hjerppe, "Understanding Economic Development…"(1998) p.85; Christensen, Hjerppe, & Krantz " Nordic National Accounts ..." (1995) p.50
[36] The exception is the re-introduction of the Ancillary Activities on farm in Agriculture. This was the case in previous versions of the ESA, but Ancillary Activities was moved to the manufacturing sector in the 1995 ESA. The NACE is the statistical classification of economic activities of the European Union. It is based on the UN statistical classifications of activities (ISIC), but includes a greater harmonisation of products required by the European Union. See http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en as consulted 10 November 2007

Output deflation can have a significant effect on GDP levels and growth rates[37]. Where direct physical volumes were available, their value was estimated by multiplying them directly with the price for 1938 prices. Where deflation was necessary the study used Laspeyres volume indexes with Paasche price indexes, with 1938 as the base year. The year 1938 is the benchmark year for the estimates due to the greater availability of both price and volume data[38].

The choice of a benchmark year is fraught with difficulty. An interwar period benchmark was deemed desirable: yet the beginning and the middle years were periods of recession. Choosing a benchmark during a recession might result in an intermediate consumption that is not representative of the economic structure of the whole period. A post-1945 benchmark was also not appropriate since both islands' economies were permanently altered during the war, making the estimation of intermediate consumption based on post-war values inappropriate. Thus the benchmark year was 1938, the final year of the series; as a result Laspeyres volume indexes tend to understate GDP (when compared to other types of indexes) growth the further away one moves from the benchmark year[39]. Yet this effect was negligible in this study, as output is estimated for just seventeen years, and any underestimate is bound to be very small, as proven by the GDP for the Low Countries[40].

The study disaggregates GDP into several levels. The Eurostat NACE rev.2 nomenclature allows us to see the value added per sector by industry by grouping the estimated value added in alphabetical codes followed by one- /two-/ three-/ and four- digit numbers. The disaggregation of output into alphanumeric codes allows an in-depth analysis of the Cypriot and Maltese economies. The NACE codes first divide the economy into wide industrial sectors (e.g. manufacturing, agriculture), which are assigned a letter of the alphabet. These are broken down into industries using similar processes: thus the output of manufacturing (NACE CODE C), is broken down into two-digit numbers such as the chemical industry (code C20), and woodworking (C16). For some industries a third-level disaggregation was possible by separating the stages of a particular manufacturing process, such as separating the sawmilling of wood (code 16.1), from the manufacture of products from wood, cork, straw and plaiting materials (code 16.2). It was sometimes possible to separate industries at a four-digit level, which separates all processes such as separating the manufacture of other builders' carpentry and joinery (code 16.23) from the manufacture of wooden containers (code 16.24)[41].

[37] United Nations, *National Accounts: A Practical Introduction* (New York, United Nations, 2003) p.105
[38] The year is also the last year before hostilities broke out in Europe. It is also used by many other economic historians, such as Feinstein, C.H., *National Income Expenditure and Output in the United Kingdom 1855–1965* (Cambridge, Cambridge University Press, 1972) p.3
[39] Rodgers, M. *Handbook of Key Economic Indicators* (USA: McGraw Hill, 1998) p.227
[40]Buyst, E, Smits, J.P.H. & Van Zanden, J.L "National Accounts for the Low Countries 1800–1990" *Scandinavian Economic History Review Vol.* XLIII no.1 (1995) pp.53–76, p.57;
[41] Eurostat, *Nace Rev.2: Statistical Classification of Economic Activity* (Luxembourg: Eurostat, 2008)

Data sources, collection methods and data quality

The primary data sources used to estimate the output of Cyprus and Malta were not collected with a national accounts framework in mind. Sometimes crucial data was not collected, or they were recorded only sporadically and in a way that was not useful for GDP estimation[42]. The usefulness of the estimates for analytical purposes is thus limited by necessary assumptions, interpolations and extrapolations that were necessary to estimate the GDP of Cyprus and Malta[43]. Thus understanding the quality and nature of the underlying data allows one to appreciate the usage limitations of the estimates.

Hjerppe and Van Ark emphasise that the quality of HNAs relies primarily on the available data, but nevertheless an accurate picture of an economy can be created from historical sources that are far from perfect[44]. Research was undertaken in the national archives of Cyprus, Malta and the United Kingdom. This study largely focused in collecting data from published reports of the British colonial authorities of Malta and Cyprus. These authorities were obliged to collect a significant amount of quantitative information in order to construct the various annual reports demanded by the colonial office in London. Although some of these reports presented the collected data ad-hoc, major exercises such as census reports and the annual statistical (blue) books had to follow specific parameters dictated by the colonial office. Such information was complemented by annual reports of government departments to form the bulk of primary sources. To this information further appropriate information was added from government reports in response to a particular issue, such as Surridge's report on rural poverty, discussed in chapter 1. Occasionally, useful information about the interwar period existed in post-1945 publications: for example the Cypriot population census of the 1960s provided information on interwar buildings, while the agricultural census of 1978 provided information on interwar breeds of livestock. Information remained woefully scant for some industries, such as construction; and thus archival research was mainly concentrated on various government files to cover such gaps. Drafts of annual reports of departments, files of colonial departments and correspondence contained additional data that was not included in the published reports[45].

[42] Hjerppe: "Understanding Economic Development…" (1998), pp.83-84
[43] Hjerppe, R. *Finland's Historical National Accounts 1860–1994: Calculation Methods and Statistical Tables* (Helsinki: Jybaskyla, 1996) p.13
[44] Van Ark, "Towards European..."(1995) p.10; Hjerpe, "Understanding Economic Development…" (1998) p.85
[45] For example, National Archives, Nicosia. File: SA1/1277/1919 "Houses for Government Officials in Nicosia" provided valuable information across the construction and rental income sectors

The annual statistical (blue) books were the first point of contact in data collection. The statistical (blue) book was a yearly compendium of statistics about the colony from all government departments, compiled in accordance with colonial office requirements. The information provided increased over time, but its format was quite homogenous and therefore allowed year-on-year comparisons. The statistical (blue) books provide enough information for estimates to be created for agriculture, forestry, fishing, mining, communications and some manufacturing industries, as well as providing most price and wage data. The accuracy of the data recorded in the statistical (blue) books is hard to fathom. The small size of the islands made the collection of information less difficult than in other colonies. However, the quality of the enumeration is largely dependent on the competence of the enumerators while poor record keeping could have resulted in unreliable results despite the islands' small size.

In order to minimise possible clerical and typing errors, the total estimates of agricultural production were aggregated from a district level. Agricultural data, import, export, government revenue and expenditure statistics are perhaps the most reliable data on the islands. This is because their accuracy was very important to the government: most of the tax revenue was collected from duties on imports and exports and agricultural taxes, while an accurate recording of government expenditure was required from London. Cyprus still had a tithe tax on the volume of major agricultural products in the 1920s, and the tax was collected by the government. This provided an added incentive for accurate information on agricultural production in Cyprus. Thus the colonial administrators had an incentive to record such data accurately.

Another important information source were the decennial census reports. Malta had a census in 1921, 1931 and 1948, and Cyprus in 1921, 1931 and 1946. The census results were particularly important in evaluating the occupational structure, the housing stock and some agricultural data. There is some concern that the methodology and survey design varied in each census. As a result some sections are not directly comparable from one census to the next[46]. The census taking methods in Malta were problematic. The census questionnaire was provided to the head of every household who was expected to fill in a schedule left at his dwelling by an official administrator, and was subjected to a fine if he did not complete the questionnaire. Literate neighbours were instructed to help illiterate heads of households[47]. This could create problems if one considers that most of the

[46] For example, there is a change in the classification of occupations from census to census; thus some occupations of 1921 appear missing from the 1931 census due to reclassification of the census categories.
[47] Richardson, M., "Aspects of Demography of Modern Malta" (PhD Thesis: University of Durham, 1960), p.15, p.17.

population in Malta was classed as illiterate in 1931. As a result, there is a significant under-reporting of women in employment, especially in agriculture[48].

The Cyprus censuses also suffered from some problems in their collection method. The census questionnaires were administered by colonial officials who were diverted from their normal occupations for the census, but in remote areas the questionnaires were completed by the village headmen (*Mukhtars*). Thus the returns from remote areas were probably less accurate than those directly collected[49]. Despite these concerns, studies have argued that the population information in the Cypriot censuses was accurate[50].

The issue that is problematic for this study is the under-reporting of females in agricultural employment in the census occupation data. The censuses record very low female employment, particularly in agriculture, with implications for productivity estimates[51]. The effect of overestimating total productivity has been corrected by increasing the number of women in agriculture, as discussed in chapter 4.

It is difficult to evaluate the reliability of the annual reports of all government departments/offices. The annual departmental reports were the basis for the construction of the statistical (blue) book, but they provide much more extensive quantitative and qualitative information. Such reports were especially useful in the estimation of intermediate consumption and in providing producer prices, while the qualitative appraisal of the economy acted as a useful check to the calculated output estimates.

Some product volumes were deemed spurious but there is information on the collection method of crop returns that indicates that most returns are quite reliable. In Cyprus, the system of agricultural estimates was reformed in 1921 in order to improve reliability. In this regard the director of agriculture, Bevan, stated that "much necessary guess work in the past will, in the future, be replaced by something more reliable"[52]. The estimates were important to the colonial government

[48] The ratio of male workers in agriculture to female workers in 1931 was 5:1. Source: Malta, *Census …1931* (1932).
[49] A problem made worse as the *Mukhtars* were paid for each questionnaire they completed. Cyprus, *Report and General Abstracts of the Census of 1911* (London : Waterlow, 1912) p.3. The *Mukhtar* was the village headman, who was a government official appointed by the colonial regime and at the same time the representative of the village.
[50] Veropoulou is, however, critical of the census population's age structure: Veropoulou, G., "The Demography of Cyprus 1881–1982" (PhD Thesis, University of London, 1997) p.38 , p.40.
[51] In the 1931 census of Cyprus only 56% of the males population were classed as employed, with an additional 11% in an "Unknown Occupation"; only 20% of the females were classed as employed. Source: Hart-Davis, *Census... 1931* (1932), Occupation Statistics.
[52] National Archives, London. File: CO69/38, Annual Report of the Director of Agriculture for the *Year 1920–1921* (GPO, Nicosia, 1921) "General"

since they formed the basis of the expected return of the annual tithe tax in Cyprus, and as a result care was taken in estimating production data. They were based on yearly surveys: officials of the department of agriculture would make village-by-village enquiries to estimate the area and the production of crops and would supplement such enquiries with reports from the *Mukhtars*. These were checked by officials and if the output was considered low the department would send its own team to estimate output. It is harder to judge the quality of data in ad-hoc reports, but such reports were produced by high ranking colonial officials with international experience in their field of research[53].

Feinstein and Thomas argue that the estimation of historical GDP suffers from three types of non-random errors: errors of measurement, omission and procedure[54]. The scale of omission errors in Cyprus can be gleaned by comparing the range of products estimated with the products of the input/output table of 1977. The agricultural products omitted in 1938 produced 9.6% of the output in 1977. This is bound to be an overestimate since products not estimated in 1938 only significantly expanded their output after the Second World War. This is the case for poultry production, which represented half of the output that was not estimated according to the 1977 input/output tables, as it was placed on a mass-production basis only after the Second World War: as a result the percentage of agricultural volume omitted is significantly less than 9.6% reported above. In addition, errors of omission in manufacturing have been minimised by including output estimates for the handicraft sector. The largest emission in the service sector was the output of insurance services, for which there was no data.

Other tests of robustness are included in the Appendix, particularly for agricultural output: for example the estimation of animals output shown in table 2.1 had a stronger correlation with rainfall and available fodder than other methods of estimating meat production. It was possible to estimate subjective margins of error for Cypriot agriculture as suggested by Feinstein and Thomas' since there was enough information on how the agricultural data was collected: the error band is estimated at +/- 7.1%, while the error band for Maltese agriculture is considered to be lower as there direct data collection by the government[55]. The total error band of GDP is bound to be higher as manufacturing and service sector estimations are less robust that those of agriculture.

[53] Hodge, J.M., *Triumph of the expert: Agrarian doctrines of development and the legacies of British Colonialism* (Ohio University Press, Athens, 2007), p.9, p.11. Sir Ralph Oakden entered the Indian Civil Service in 1894 and served in various posts in the United Provinces until his retirement in 1931. Between 1928 and 1930 he was Senior Member of the Board of Revenue, Lucknow. Surridge was the commissioner of Paphos and knew Cyprus well.

[54] Feinstein, C.H. and Thomas M. "A Plea for Errors", University of Oxford, *Discussion Papers in Economic and Social History* (2001), no.41. p.9

[55] Source: Feinstein & Thomas, "A Plea for Errors", (2001), pp.13-18

Overall, data quality is sufficiently robust to allow for reliable estimation of output. There are issues of data quality mainly due to the under-reporting of female occupations in the census, but these weaknesses are partially addressed by re-calculating the proportion of women in agricultural employment. Yet, the reliability of the GDP estimates is not only based on the quality and quantity of the data sources: the methodology used has an impact on the reliability of the estimates. Thus a thorough analysis of the estimation procedures will allow one to better understand the possible limitations of the islands' historical national accounts.

Estimation procedures

A general description of the methods used to compile the GDP of Cyprus and Malta is necessary in order to evaluate cross-study comparability. This section is a synopsis of the major themes. A detailed Appendix is included in order to provide greater detail in the methodology used in creating these presented estimates.

Gross Domestic Product derived using the production approach is defined as "the value of all goods and services produced in a period, minus the goods and services consumed in the production process during that period"[56]. Gross Value Added is defined "as the value of goods and services produced during a production period but not immediately used up in the production process of that period"[57].

Thus:

$$GVA = Y - IC \quad (1)$$

Where:

$GVA = Gross\ Value\ Added = GDP\ in\ Factor\ Prices\ (GDP_f)$

$Y = Gross\ Output$

$IC = Intermediate\ Consumption$

$$GDP_m = GDP_f + T - S \quad (2)$$

$GDP_m = GDP\ in\ Market\ Prices$

$T = Taxes\ on\ production$

$S = Subsidies\ on\ production$

[56] United Nations, *National Accounts…* (2003) p.5, p.16
[57] United Nations, *National Accounts…* (2003) p.5

In order to estimate the GDP through the production approach, the value added of each industry is calculated separately and then combined in the general framework expressed in equation (2). The aim was to estimate the physical volume produced in each industry and multiply it with the product's price in 1938 in order to estimate the gross output per industry in 1938 prices[58]. With the exception of Malta's postal services, it was only possible to estimate intermediate consumption for the benchmark year, and assume that the value added share of gross output remained constant for the period 1921-1938.

Due to data limitations, double deflation was not feasible as dictated by current best practice, which argues for a conversion of gross output and intermediate consumption to constant prices by two separate price deflators. This was not possible due to the lack of sufficient price data, particularly of intermediate consumption prices. The majority of output estimated was based directly on 1938 prices. Where deflation was necessary an appropriate end-product deflator was used; however the limited price information meant that the Consumer Price Index was also used extensively. The explanation of how the consumer price index was constructed is included in the Appendix.

The value added per industry was summed to obtain the total value added. Thus, the GDP estimate can be shown as a whole and subdivided by industries, which can be subdivided into NACE categories as explained above.

[58] The methodology was based on Schulze, M., "Re-estimating Austrian GDP, 1870-1913: Methods and Sources" *Working Paper, London School of Economics, Department of Economic History*, No.36, (1997) pp.5-14

The industries are listed below[59].

$$GDP_{fi} = w_a A + w_g G + w_m M + w_u U + w_c C + w_t T + w_s S + w_f F + w_h H \quad (3)$$

Where:

$GDP_{fi} = GDP\ in\ factor\ prices\ of\ Country_i$

$$w_a, w_g, w_m, w_u, w_c, w_t, w_s, w_f, w_h = \frac{Value\ Added\ of\ Sector_x}{GDP_f\ of\ Benchmark\ year}, \quad \sum w_x = 1$$

$A = Value\ added\ in\ Agriculture, Forestry\ and\ Fishing,$ **nace code A**

$G = Value\ added\ in\ Mining\ and\ Quarrying,$ **nace code B**

$M = Value\ added\ in\ Manufacturing\ and\ Handicrafts,$ **nace code C**

$U = Value\ added\ in\ Electricity, Gas\ and\ Water\ Supply,$ **nace code D, E**

$C = Value\ added\ in\ Construction,$ **nace code F**

$T = Value\ added\ in\ Trade, Transport\ and\ Communications,$ **nace code G, H, J**

$S = Value\ added\ in\ Services\ and\ Administration,$ **nace code I, M, N, O, P, Q, R, S, T, U**

$F = Value\ added\ in\ Financial\ Services\ ,$ **nace code K**

$H = Rental\ Income\ from\ Housing,$ **nace code L**

The sources available vary from sector to sector. As a result each industry necessitated different estimation procedures. In order to ensure comparability with other studies the procedures used were informed by HNA estimates of other Mediterranean countries such as Spain, Greece and Italy[60].

AG = Agriculture, forestry and fishing (Nace Code: A)

The estimate of agricultural production was the most extensive in terms of products estimated and sources used. For Cyprus they were estimates of output for 85 products and 42 products in Malta. The products were grouped in 6 two-digit categories, which are sub-divided into 26 three-digit categories.

The time period used for the underlying Maltese agricultural data was corrected because some series represented the volume for an administrative year (from April to March) rather than a calendar year. In addition the primary sources of Cyprus did not provide enough farm-gate prices. A

[59] Adapted from Schulze, M. "Re-estimating Austrian GDP…" (1997) pp.5-14; Schulze, M "Patterns of Growth and stagnation in the late 19th century Habsburg economy" *European Review of Economic History* Vol.4 (2000) pp.311-340, pp.331-336

[60] Sources: Prados de la Escosura, L. "Spain's Gross Domestic Product, 1850–1990: A New Series" *Ministerio de Economia y Hacienda, Documentos de Trabajo Madrid* (1993); Kostelenos, G. *Money and Output in Modern Greece: 1858–1938* (Athens: Centre of Planning and Economic Research, 1995); Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προϊόν* (2007); Fenoaltea, S. "The growth of the Italian economy, 1861-1913: Preliminary second-generation estimates" *European Review of Economic History*, vol. 9, no.3 (2005) pp.273-312

farm-gate price dataset was constructed by combining retail, export and import prices. The prices were adjusted in order to take account of the trade and transport margin and create a farm-gate price database for Cyprus[61]. This was checked with spot estimates of farm-gate prices, and found to be compatible.

Some interpolation and extrapolation was necessary to fill in data gaps. For example the volume of Cypriot tomatoes and Maltese vetches were not recorded yearly. In some cases there was adequate supplementary information, such as annual yields from government-run farms that enabled output to be estimated. When such information was not available, the missing output of a product was interpolated based on a complete product series that was highly correlated. The detailed methodology is given in the Appendix.

The method of wine estimation led to the output of modern wineries and rural wine production to be non-distinguishable in Cyprus. It was also impossible to disaggregate the output of semi-processed tobacco and cotton into agricultural output and agricultural processing. As a result the manufacturing sector's share in GDP is underestimated as wine and semi-processed tobacco are included in the agricultural sector, but the overall assessment of grape and vine products output is considered representative.

The production of citrus fruit was also pivotal in post-war agricultural development in Cyprus. Unlike Maltese data, the Cypriot citrus data was sporadic and unreliable. Citrus production was estimated based on irrigation and citrus tree data that were provided in the Cypriot censuses, as described in the Appendix. This necessitated strong assumptions and resulted in a linear production growth. However the method seems to accurately capture that tree crops were less affected by drought than other products, because they relied on permanent irrigation rather than surface aquifers. However, there may be some overestimation of citrus production from 1931 onwards due to the likelihood of increased changes in land use to citrus orchards during the Second World War. Thus the production of Cypriot wine, citrus and fruit necessitated a departure from ESA methodology due to incomplete data. All the estimates were checked for plausibility both by comparing with post-WWII data as well as comparing the results with other countries as shown in the Appendix.

For marginal products it was only possible to construct spot estimates and their production was considered constant throughout the period. However, such cases were limited to less than 1% of the

[61] In most cases a margin of 25% was provided for trade and transport as estimated for the Republic of Cyprus for the 1960s. Source: National Archives, Nicosia. File: V53/26 "Gross Output and Inputs – Indirect Taxes and Value Added in the Agricultural Sector during the Period 1959–1968" Table 6

agricultural gross output. For a small range of products, there was no information available and thus no attempts were made to estimate their output[62].

Estimating the output of animal production was fraught with difficulty because the animals were both the unit of production and the product. The annual stocks of animals were available in the statistical (blue) books, but the conversion of the animals into animal products was unknown. In order to estimate the output of animal products in Cyprus, an adapted version of the Kostellenos *et al.* that maximised the primary information available was constructed and its detailed construction is described in the Appendix[63]. A summary of the model used to estimate animal products is given in table 2.1. Primary sources on annual animal slaughtering were in Malta in the annual report of animal slaughter houses. Thus the animal products model was used only for the estimation of milk and animal skin output in Malta.

The adapted Kostellenos *et al* model has weaknesses: it assumes that the ratio of births, deaths, flock composition, milk yield and slaughter weight were constant. As a result the output of animal products is somewhat overestimated in periods of drought and underestimated in times of fodder abundance. However the output of animal production, using table 2.1, were much more favourable that other methods of animal output estimation.

[62] Products not enumerated include honey, chickens, rabbits, game, eggs, cucumbers, bananas, asparagus, artichokes and fresh salad herbs

[63] Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προϊόν* (2007) pp.47–58, pp.50-51. This was adopted using qualitative and quantitative information from: Republic of Cyprus, *Cyprus Agricultural Census 1977* (Nicosia: Ministry of Agriculture, 1978), Bevan, W. *Notes on Agriculture in Cyprus and its Products*, (Nicosia: GPO, 1919); Maule, J.P. & Shevki, M. "The Breeding and Management of Sheep in Cyprus", *The Cyprus Agricultural Journal*, Vol. XXX, Part 4, (1935) p.88; Maule, J.P. "The Milk Yield of the Maltese and Native Goats", *The Cyprus Agricultural Journal*, Vol. XXXIII, Part 4, (1938); Constantinou, A. *Ruminant Livestock Genetic Resources in Cyprus*, (unpublished, 1981); Gambles, R. M. "Diseases of Sheep and Goats" *The Cyprus Agricultural Journal*, Vol.XXXI, part.4 (1936)

Table 2.1: Animal production model.

No. of Equation	Explanation	Notation	Source:
(1)	Number of animals year t	Y_t	Blue Books (1921-1938)
(2)	Number of animals year t - 1	Y_{t-1}	Blue Books (1921-1938)
(3)	Gross increase / decrease	$I = Y_t - Y_{t-1}$	(3) = (1) – (2)
(4)	Ratio of males to total flock	r_m	Republic of Cyprus, *Agricultural Census* (1978), Bevan (1918), Kostellenos *et al* (2007)
(5)	Number of males year t-1	$M = r_m Y_{t-1}$	(5) = (2) * (4)
(6)	Number of females year t-1	$F = (1 - r_m) Y_{t-1}$	(6) = (2) * (1 – (4))
(7)	Reproduction coefficient	α	Maule & Shevki (1935), Maule (1938), Constantinou (1981)
(8)	Lambs / kids born	$\Lambda = \alpha F$	(8) = (7) * (6)
(9)	Natural Deaths / Disease / Culling	Θ	Maule & Shevki (1935), Gambles (1936)
(10)	Number of lost animals during Yt	$D = Y_{t-1}\theta$	(10) = (2) * (9)
(11)	Net exports Y_t	X_t	Blue Books (1921 – 1938)
(12)	Number of lambs / kids needed for Y_t and net exports X_t	$E = I + D + X_t$	(12) = (3) + (10) + (11)
(13)	Number of lambs / kids consumed	$A = \Lambda - E$	(13) = (8) – (12)
(14)	Number of adult animals consumed	$B = \frac{D}{2}$	Maule & Shevki (1935)
(15)	No. animals consumed	$C = A + B$	(15) = (13) + (14)
(16)	Adult, meat per carcass (kg)	μ_a	Kostelenos *et al.*, (2007)
(17)	Lamb / kid, meat per carcass (kg)	μ_y	Kostelenos *et al.*, (2007)
(18)	**Total meat produced**	$Total\ Meat = \mu_y A + \mu_a B$	**(18) = [(13) * (17)] + [(14) * (16)]**
(19)	Wool per surviving adult male (kg.)	w_m	Maule & Shevki (1935)
(20)	Wool per surviving adult female (kg.)	w_f	Maule & Shevki (1935)
(21)	**Total wool produced**	$Total\ Wool = [w_f(Y_t - E)](1 - r_m) + w_m(Y_t - E)]$	**(21) = [[(1) – (12)] * [[1 – (4)] *(20)]] + [[(1) – (12)] *(4)] * (19)]**
(22)	Adult hide weight per slaughtered animal (kg.)	H_a	Kostelenos *et al.*, (2007)
(23)	Lamb / kid hide per slaughtered animal (kg.)	H_y	Kostelenos *et al.*, (2007)
(24)	**Total hides produced**	$Total\ Hides = H_a B + H_y A$	**(24) = [(14)* (22)] + [(13)*(23)]**
(25)	Milk per surviving female adult (ltr.)	γ_f	*Government Farm Reports. Cyprus Agricultural Journal* (1932 - 1938), Kostelenos *et al.*, (2007)
(26)	**Total milk produced**	$Total\ Milk = \gamma_f [Y_t - [E(1 - r_m)]]$	**(26) = [[(1) –[(12) * (1 – 4)]] *(25)]**

The output of forestry was estimated for Cyprus only as Malta was not forested. The forest cover of Cyprus was extensive, as 18% of the total land area was under the administration of the forestry department[64]. The forestry department was one of the first set up by the British administration, and as a result a substantial amount of quantitative information was provided by the forestry department reports. The estimation of forest output is explained in detail in the Appendix.

MG = Mining and quarrying (Nace Code: B)

There was ample information on the volume and value of mining and quarrying exports in the statistical (blue) books; these were supplemented by information in the annual reports of the mining department in Cyprus. Only the output of sand in Cyprus and gravel and sand in Malta remain unaccounted for.

The estimation of annual mining output creates certain difficulties since it is not always clear if the output recorded is the ore sold rather than the ore extracted. GDP estimation requires the volume of ore extracted in a given year and not just the amount of ore sold. Yet, some of the primary information seems to record the sale rather than the extraction of ore: the partial closure of the largest copper mines in Cyprus in 1931 and 1933 appears to affect copper ore extraction with a lag[65].

Fenoaltea argues that the estimation of the volume based on the the ore extracted can lead to unpredictable productivity results as the richness of the ore changes "from year to year, from batch to batch" [66]. Fenoaltea did not estimate a conventional gross output to value added ratio, arguing that the specific attributes of the extractive industries will lead to an overestimation of intermediate production. Instead, he constructed value added directly from wages, returns on horsepower, and a residual surplus. It was not possible to estimate the intermediate consumption of the mining sector: all quarries and mines on the islands were private companies, whose business files have not been found. Other European HNAs, however, can provide the proportion of value added to gross output. Ivanov calculated the value added to gross output ratio in Bulgaria as 71.2%, and Schulze argued

[64] Waterer, R.R. *Cyprus: Empire Forests during the War 1939–1945* (Nicosia: GPO, 1946), Chapter 1.
[65] For the closures see: Lavender, *The Story of…*(1962), p.241
[66] Fenoaltea, S. *Extractive Industries* (Unpublished: 2007) Sections: B01.02 The Employment Data and Value Added estimates; B01.03 Output and Real Value Added, B02.01 Introduction.

that the ratio of Austrian mining activities was 82%[67]. Kauppila's thorough input-output analysis of the Finnish mining sector estimates the value added to gross output ratio at 83.6%[68].

There is some information on the intermediate consumption of mining and quarrying for the post-Second World War period. The ratio of value added to gross output in mining in 1950 was 41.2% for Cyprus. In Malta the value added ratio of quarrying in 1962 was 68.8%[69]. It is argued that the ratio of national accounts for Cyprus in 1950 is too low and unsuitable as the quality of the copper ore available in Cyprus declined during the late 1940s, thus reducing the share of value added to output. In addition the mechanisation of the mining and quarrying sector during the late 1940s raised both gross output and intermediate consumption (especially for fuel and repairs) as capital replaced labour, reducing the share of value added to output. Thus based on other European HNAs a conservative estimate of 75% for Cyprus and 70% for Malta was used to estimate value added[70]. A lower ratio was used for Malta as it only had quarries. The share of value added to gross output is assumed constant throughout the period.

MF = Manufacturing and handicrafts (Nace Code: C)

There were various data sources on manufacturing, but such sources were not necessarily compatible or complimentary. As a result the estimation of manufacturing varied from industry to industry in order to use the best data possible: some industries were estimated by the output approach, others using the expenditure approach and the handicraft sector was estimated by the income approach. Detailed explanation is available in the Appendix.

The statistical (blue) books provided sufficient information for the largest industrial factories on the island. This allowed for an estimation of the value added of these industries from the output side. There was no information on the yearly change of stock in inputs making it necessary to assume that companies began and ended the accounting period with a constant level of inventories, and that all goods sold were manufactured on site. Annual output was estimated annually and value added was estimated by estimating the value added of 1938 and keeping the share of value added to output

[67] Schulze, "Re-estimating Austrian GDP 1870-1913…"(1997), p.6; Ivanov, *Bulgarian National Income…* (Unpublished) Appendix Table W.

[68] Kauppila, J. *The Structure and Short-Term Development of Finnish Industries in the 1920s and 1930s: An Input-output Approach* (Helsinki: Statistics Finland, 2007) pp.234-235

[69] Cyprus, *National Income, Product, Expenditure 1950* (1951) Appendix I, Malta's supply and use tables do not distinguish between construction and quarrying, Central Office of Statistics, Malta, *National Accounts of the Maltese Islands 1954-1963*, (Valletta, Department of Information, 1964), Table 64.

[70] Schulze, "Re-estimating Austrian GDP…" (1997) p.6; Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προιόν* (2007) pp.80-85; Hjerppe, *Finland's Historical National Accounts…* (1996), Appendix p.32; Prados de la Escosura, "Spain's Gross Domestic Product" (1993) pp.26-28

constant. The disadvantage of not estimating the yearly intermediate consumption is the assumption that no technological change took place in those industries in the period 1921-1938. However, there simply is not enough information to allow the annual calculation of intermediate consumption.

Where there was insufficient information available to provide estimates as above, the yearly output estimates were based on their industrial inputs. The statistical (blue) books of Cyprus also provided sufficient information in order to estimate value added for the 1938 benchmark for thirteen other industries, but not yearly output due to gaps in the data series. A yearly value added estimate was extrapolated from the benchmark year by assuming that the growth rate of these industries was similar to the average of the industries described above. Such industries constituted just 3.4% of the total manufacturing output in Cyprus yet they were important in Malta, were they constituted 25.6%.of manufacturing. The reliance on such methodology for Malta is due to the limited evidence of its manufacturing. An extensive use of statistics within the statistical (blue) books and in censuses formed the basis for indirectly estimating the remaining manufacturing industry as explained in the appendix.

The output of the handicraft sector was also estimated. This sector was important as it provided complementary income to agricultural activities. Its output was estimated using occupation statistics based on the method of Hjerppe *et al*[71]. Thus information was collected on employment and wages, in order to estimate the wage bill of the handicrafts industry. The handicrafts were divided into industries, and using information from Felner, the total wage bill was converted to the value added in 1938 prices[72]. More information is available in the Appendix.

U = Electricity, gas and water supply (Nace Codes: D & E)

There was not enough information to estimate any private provision of utilities. This was problematic for Cyprus, where utilities were all provided by municipal authorities and private companies. As no information was available for utility industries in Cyprus, the production of utilities was estimated on the basis of post war national accounts as 2.5% of the combined manufacturing and trade output. In Malta, centralised data was available for utility provision in relevant government reports, allowing for estimates of output, intermediate consumption and value

[71] Hjerppe, R., Hjerppe, R., Mannermaa, K., Niitamo, O.E., Siltari, K. *Suomen Teollisuus ja Teollinen Käsityö 1900-1965* [Industry and Industrial Handicraft in Finland] (Statistics Finland, Helsinki, 1976), p.210

[72] Felner, F. "Das Volksvermögen Österreichs and Ungarns" [The national Wealth of Austria and Hungary] *Bulletin de L'Institut International de Statistique* Tome XX – 2e Livraison (1915), pp.503–573

added[73]. The estimate of value added of Maltese utilities was calculated through summing of the cost of production as government run utilities were non-market producers charging less than the market prices[74].

CT = Construction (Nace Code: F)

The census reports provided substantial information on the number of occupied and unoccupied urban and rural dwellings for Malta and Cyprus. In Malta there was annual information on the number of constructed houses and additions to existing houses in the annual report of the department of labour, with the 1938 report providing the average value of construction[75]. Agricultural buildings were also enumerated by the department of labour, but commercial construction was estimated by tracking the construction urban and sub-urban dwellings. The detailed methodology is provided in the Appendix.

Yearly construction data were not available for Cyprus, but the total stock of housing for 1921, 1931 and 1946, was known from the Cypriot censuses. Thus the total rural and urban houses constructed for the periods 1921-1931 and 1931-1946 was known. Modifying the method suggested by Prados de la Escosura, the imports and the domestic production of construction materials were added to create a construction materials index, weighted by the amount of material needed to construct a Cypriot house[76]. The construction materials were summed and the yearly shares of construction used to allocate the total houses constructed during the periods 1921–1931 and 1931–1938. The construction of agricultural buildings was linked to the construction of rural dwellings, and the construction of commercial buildings was linked with the construction of urban dwellings. The value of building and the intermediate consumption of construction were estimated based on archive sources that included government housing initiatives for its staff, agricultural building construction costs, as well as a report on rural development published in 1938[77]. The methodology is described in detail in the Appendix.

[73] National archives, London. Files: CO161/120,121,122,123, 124 "Report of the water and electricity department" 1921-1938

[74] Lequiller, & Blades, *Understanding National Accounts* (2006), p.105.

[75] National archives, London. File: CO161/123 "Report of the commissioner for labour for 1938-1939"

[76] Prados de la Escosura, "Spain's Gross Domestic Product…" (1993) p.30-32. The construction index was a 3-year average of construction material in order to negate stock keeping.

[77] James H.M and Koumides C. "An Analysis of Farming Costs in Cyprus (Part 2)", *Cyprus Agricultural Journal*, Vol.XXXIV, Part.2 (1939), pp. 60-66; National Archives, Nicosia. File: SA1415/1920/4, "PWD Cyprus–Proposed houses for Expatriate officers"; National Archives, London. File: CO69/45, Cyprus Administration reports 1938, Section 12 "Rural development".

The value added of public construction was estimated using information provided by government expenditure, deflated by a price index of construction of materials. The share of value added to gross output was estimated for the benchmark year and assumed constant for the period: substantial information of the intermediate consumption of construction was collected by the reports on government housing and agricultural building mentioned above.

TTC = Trade, transport and communications (Nace Code: G, H, J)

Trade output is estimated by comparing factory prices with retail prices, and multiplying the total tradable volume of goods by the trade mark-up[78]. This was the sector for which the least amount of information could be collected. This is hardly surprising as it is a sector dominated by private companies, and thus government archives do not provide sufficient information on wholesale and retail prices.

The trade and transport margins were estimated using a combination of interwar sources and post-Second World War statistics; more detailed explanation is provided in the Appendix. The estimation of trade was based on the trade margin of domestic trade and a mark-up on the sum of output of agricultural and manufacturing goods that were traded, while foreign trade was estimated on the basis of the volume of import and exports and retail and import price differentials. For the estimation of domestic trade, it was suggested that some output was not traded as explained in the Appendix. The value of the traded agricultural and manufactured goods was multiplied by the trade and transport margin to estimate the total output. The import, export and re-export margins were also calculated in constant prices, and added to the volume of domestic trade and transport to achieve an estimate of total output of trade. The proportion of intermediate consumption was estimated using post-Second World War data for Cyprus[79].

The transport of railways and trams has been estimated based on passenger miles and freight traffic, but it was a very small part of transport output in either Cyprus or Malta. The value added of goods freight was removed from the value added of transport to avoid double counting. The value added of railroad passenger traffic was added to the value added of other passenger traffic. Other passenger traffic was estimated by creating a benchmark for 1938 on the relationship of passenger and goods traffic, and then extrapolating an annual estimate by a transport index consisting on the yearly number of motor vehicles licensed in Malta and Cyprus.

[78] Lequiller, *Understanding National Accounts* (2006) p.107

[79] Source: National Archives, Nicosia. File: V53/26 "Gross Output and Inputs–Indirect Taxes and Value Added in the Agricultural Sector during the Period 1959 – 1968" Vassiliou, *Input–Output Analysis…*(1959) p.69

Postal and telephone services on the islands were government controlled; thus ample information for the estimation of their value added was available from the annual reports of their departments. The value added of the rail and postal services was used to estimate telegraph output. It was not possible to estimate the output of other communication services.

SF = Financial services (Nace Code: K)

The output of financial services from the output approach requires information on the total deposits of the banks, as well as on the base interest rate and bank lending rates. The Cypriot statistical (blue) books provided information on the yearly total balances of the economy, lending rates and intermediate consumption costs were provided by archive work on the Cypriot branch of a British multinational bank[80]. The co-operative sector's output was estimated by estimating its size of key benchmark years and using that proportion to estimate the size of the co-op saving sector in that year. In Malta the only information available was occupational data. The output of the financial sector there was estimated on the basis of the wage bill. No estimates of insurance output were possible for either island. The detailed methodology is provided in the Appendix.

S = Other services and Public administration (Nace Code: I, M, N, O, P, Q, R, S, T, U)

This category includes a diverse range of occupations. Despite the growing awareness of the services' importance in the development of economies, and hence the need to more accurately reflect their output in HNAs, it is difficult to estimate the direct output of such services[81]. The government sector's value added was estimated by calculating the wages and pensions of government employees in current prices that are available in the annual reports on government expenditure in the statistical (blue) books; this was deflated to constant prices using the constant price index.

The deflator was the Consumer Price Index (CPI) as there were insufficient price data to estimate a specific deflator for the government sector. The local government sector was not estimated. This is not a problem in Maltese GDP as local government did not exist prior to independence, but local government was established in Cyprus in the 1930s. Yet, the information that exists on municipality

[80] Lending rates were a constant 3% above the base rate. Source: British Library of Political and Economic Science Archive, Ionian Bank Papers, File: 6/64 Luard to Court of Governors, 12th Jan, 1927; File 6/100 General Manager to Chairman, 18th December 1929.

[81] Broadberry, S. & Sayanthan, G. "From the Counting House to the Modern Office: Explaining Anglo-American Productivity Differences in Services, 1870-1990" *Journal of Economic History,* Vol.62, No.4 (2002), pp.967-998, p.967, p.968. Estimating output of services from the census occupation data assumes constant productivity.

expenditure does not distinguish between donations from the central government and local taxes. It was not possible to establish the share of the central government subsidy, which was considered to be a high proportion of local government expenditure and thus local government was excluded to avoid double counting.

Government doctors and teachers were not included in the government sector but in the relevant sectors of health and education[82]. The value added of professional, entertainment and personal services was estimated using the occupational statistics provided by the censuses. The yearly number of practitioners was assumed to follow a linear growth rate from 1921 to 1931 and from 1931-1946 (1921-1948 for Malta). The yearly number of practitioners was multiplied by their wage in 1938. The wage level per profession was varied according to the number of men, women and apprentices as recorded by the census; detailed information is available in the Appendix.

The estimation procedure for the private sector assumes that the productivity of the most of the service sector employees remained constant throughout the period, while census occupation statistics are not an accurate indicator of current employment. Yet unless better information becomes available, estimating the professional and entertainment output as described above is the common practise.

HI = Rental income from housing (Nace Code: L)

The implied rental income from housing was estimated based on dwelling information in the censuses, as well as archival resources. The censuses provided decennial information on rural and urban housing construction. Estimates were made of the value of the dwellings based on archival material in the National Archives in Rabat and Nicosia as well as using other governmental sources. This was combined with the series on house construction produced to estimate housing construction. The housing stock of Cyprus and Malta was estimated decennially from 1851, and yearly for 1911 until 1960. The value of housing in both Cyprus and Malta was estimated using government reports and files of their respective public work departments[83]. Yet house values decrease with increased age as depreciation sets in[84]. The best method of calculating depreciation is the perpetual inventory method where the total stock of housing is depreciating at a constant rate

[82] United Nations, *National Accounts…* (2003) pp.43-48

[83] National Archives, Nicosia. Secretarial Archive, File: SA1 605/1921, SA1 673/1920, SA1 1277/1919, SA1 1415/1920/1-5. National Archives, Rabat. File: CW1 / 2581.

[84] Depreciation of the stock of dwellings was undertaken to calculate the declining value of rent from depreciated houses.

according to its age[85]. Using primary sources, it was estimated that the average lifetime of a house was 50 years. Thus the 1901 housing stock was extrapolated back to 1861 based on census reports. The yearly housing stock was added to the total housing stock and depreciated using the perpetual inventory method. The detailed method is described in the Appendix.

The proportion of yearly rental income was imputed using rents of government houses in Nicosia and checks of buildings by the public works department in Malta; the implied value added from housing was estimated as a constant percentage of the housing stock value, creating different rent values for urban and rural buildings. [86]. The share of rent to the total value was applied to the housing stock to estimate the implied rental income from housing for the period 1921-1938[87]. The imputed rental income was less than 4% of the GDP for either Malta or Cyprus throughout the whole period.

GDP at factor prices and market prices

By adding up the gross value added of each industry, one is estimating GDP at factor prices i.e. the income of the islands in the prices of the producers. This does not equal GDP constructed from the expenditure approach, which records expenditure by consumers[88]. Consumers purchase goods and services at the consumer price, which includes any taxes on products as well as any subsidies. In order to estimate GDP at market prices one needs to add the taxes of products such as import excise duties and to subtract any product subsidies[89].

However, due to the different estimation procedures used in calculating GDP for Cyprus and Malta, estimating GDP at market prices is difficult. One of the main problems is that the estimation method of trade, mining, or transport may lead to double counting as the prices of product specific taxes may have already been included in the prices used to estimate their value added share. In addition the provision of taxes and subsidies in the islands was complex as not all taxes and subsidies were controlled by the central government: in Cyprus, local communities added their own taxes on products to pay for education. Thus GDP at market prices is only estimated for 1938 largely for completeness, and estimates are recorded at factor prices unless indicated otherwise.

[85] Meinen, G., Verbiest, P. & De Wolf, P. *Perpetual Inventory Method: Service Lines, Discard Patterns and Depreciation Methods* (Voorburg, Statistics Netherlands, 1998) pp.6-7
[86] National Archives, Rabat. Public Works, File: PW534
[87] National Archives, Nicosia. File: SA1415/1920/1 "Construction of Dwelling houses For Government Officials"; National Archives, Rabat. File: PW534/1929 "Rent Evaluation of Urban Tenements"
[88] The difference between the two is the taxes less subsidies on products (including non-deductible value added taxes) on consumers. United Nations, *National Accounts…* (2003) p.22
[89] United Nations, *National Accounts…* (2003) p.5

Conclusion

The GDP estimates provide an empirical base to structure our understanding of the living conditions on the islands during the interwar period as previous estimates of income have not clarified their economic performance. A structured and comprehensive estimation of GDP will provide the basis for detailed analysis of the islands' development. Using an extensive array of information from government sources, the quality of the data is judged to allow for relatively accurate estimates. By describing the methodology in detail, this thesis attempts to eliminate the ambiguities of past attempts with a clear, product-by-product analysis of the estimation procedure, making the estimates data fully transparent.

Chapter 3: Overview of Results

"The reconstruction of historical national accounts is, of course, not an objective in itself"[1].

The aim of this chapter is to present the aggregate GDP for the islands for the interwar period. This is essentially the first time that data has been complied in a national accounts framework to provide yearly estimates for the interwar period that can be compared with other countries. The results confirm that their growth experience was lacklustre: the islands, particularly Malta, performed badly even when compared to other Southern European underperformers. Cyprus and Malta exhibited very different economic structures from one another. The Cypriot economy was akin to other colonial economies that depended on agriculture, while Malta was facing a peculiar type of underdevelopment: its economy was dominated by expenditure of the British armed forces. Cyprus was grievously affected by the great depression because it coincided with a serious drought; the recession was long and recovery took place mainly due to the rapid development of the mining and construction sectors. Malta experienced a slow but stable GDP trajectory and it was only marginally affected by the great depression; however, unlike Cyprus, Malta did not participate in the European post-depression recovery.

Population estimates

Estimating the annual population of the islands is necessary to evaluate the per capita GDP. The colonial government of Cyprus estimated the population yearly, but its derivation is unclear since there was no registration of migrants during the period, and the registration of births and deaths was unreliable[2]. Birth and death registration was the responsibility of the village elders, the *Mukhtars*. The reporting of deaths must have been quite inaccurate since Agathangelou argued this system led to gross underestimation of the death rate in Cyprus in the 1980s[3]. In Malta, birth and death registration was the responsibility of parish priests who then informed the chief medical officer of the colony; which could lead to results as unreliable as in Cyprus[4]. Migration was also a concern when estimating the population but successful migrants in the interwar period were much more

[1] Van Ark, "Towards European..." (1995) p.5
[2] The formulation of the yearly population estimate by the government is based on births and death and the net departures of all travellers, and then revised by a non-stated correcting term. In the case of Cyprus, the difference between the government population's estimate and the population estimate presented in table 3.2 is at most 4.5%.
[3] Agathangelou, A., *Mortality in Cyprus,* (Nicosia: Ministry of Finance, 1985) p.11
[4] Richardson, "Aspects of the Demography..." (1960) p.20

limited than before or after[5]. As a result migration did not significantly affect the estimation of the resident population.

The census figures were preferred as a basis for estimating population since they provide accurate spot estimates rather than unclear yearly estimates. Censuses took place in 1921, 1931 and 1946 in Cyprus and in 1921, 1931 and 1948 in Malta. The annual population was linearly interpolated between these points. The growth rates of the population of Cyprus and Malta are shown in table 3.1.

Table 3.1: Average population growth (%) per annum, Cyprus and Malta, 1921-1946.

	Cyprus		Malta
1921–1946	1.49	1921–1948	1.36

Sources: Hart-Davis, *Census…1931* (1932); Percival, *Census...1946* (1947); Malta, *Report of the Census of the Maltese Islands* (Valletta: GPO, 1922); Malta, *Census...1931* (1932)*;* Malta, *Eleventh Census…1948* (1949).

The interpolation of 1931 to 1946 (1948 for Malta), could lead to population distortions, if population grew considerably during the Second World War. However, the effect of the war on population was quite the opposite[6]. The annual population figures used are presented in table 3.2.

Table 3.2: Yearly population estimates, Cyprus and Malta, 1921- 1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	212,258	310,715	1931	241,621	347,959
1922	215,026	314,253	1932	245,001	353,982
1923	217,830	317,830	1933	248,429	360,109
1924	220,671	321,449	1934	251,905	366,342
1925	223,549	325,109	1935	255,429	372,683
1926	226,464	328,810	1936	259,002	379,134
1927	229,417	332,554	1937	262,626	385,697
1928	232,409	336,340	1938	266,300	392,373
1929	235,440	340,169	1946	297,606	450,114
1930	238,511	344,042	1948	305,991	

Sources: Hart-Davis, *Census…1921* (1922); Hart-Davis, *Census...1931* (1932); Percival, *Census...1946* (1947); Malta, *Census...1921* (1922); Malta, *Census...1931* (1932); Malta, *Eleventh Census...1948* (1949)[7].

Population growth was quite rapid when compared to previous historical periods and as a result it reduced per capita GDP growth. Table 3.3 indicates that the natural increase in the population was much more rapid than before with a result of Malta doubling its population in fifty-two years and Cyprus in fifty-one. If population growth in the period 1921-1938 was constant at the level of 1901–1921, both islands would have higher per capita GDP growth: Malta's would have increased

[5] Bonnano, *Capital, Accumulation…* (1989) p.23; Veropoulou, "The Demography of Cyprus", (1997) p.57; St John-Jones, L.W., *The Population of Cyprus: Demographic Trends and Socio-Economic Influences* (London: ICS,1983) pp.92-93.

[6] Source: Malta, *Eleventh Census of the Maltese Islands* (Valletta: Progress, 1949).The mortality effects of the Second World War as well as health initiatives undertaken in the early 1940s make adjustment difficult.

[7] The growth rates presented in table 3.1 are an average for the period. Thus they vary from the results in table 3.2 which was estimated using the growth rates of 1921-1931 and 1931-1946 (1948 for Malta).

by 0.67% per annum and Cyprus' by 0.13% per annum. However, the population was still growing slower than neighbouring countries which had faster rates of economic growth: Turkey's population grew at a average of 2.2% per annum for the period 1923-1938, while Bulgaria and Greece grew at 1.6% and 2.0% respectively during the period 1921-1938[8].

Table 3.3: Annual average population growth, Cyprus and Malta, 1921-1960.

	Cyprus (%)		Malta (%)
1901–1921	1.36	1901–1921	0.70
1921–1946	1.49	1921–1948	1.36
1946–1960	1.80	1946–1957	0.30

Sources: Hart-Davis, *Cyprus…1931* (1932); Percival, *Census... 1946* (1947); Cyprus, *Census of Population and Agriculture 1960* (Nicosia: GPO, 1962); Malta, *Census… 1931* (1932)*;* Malta, *Eleventh Census…1948* (1949); National Statistical Office Malta, *Census of Population and Housing 2005, Volume 1* (Valletta: National Statistical Office, 2007).

The increased rate of population growth was mainly due to a reduction of migration opportunities rather than improvements in medical provision. Migration was seen as a legitimate means to control the population in Malta: there was an established ideology within the colonial administration that argued that the Maltese population growth would always exceed Malta's potential for economic growth if migration was not encouraged[9]. Substantial resources were allocated to promote emigration during the interwar period but with little success: the reluctance of the new world to receive Maltese migrants and the destruction of established communities around the Mediterranean due to nationalism meant net migration was very low[10]. Many established Maltese communities in Turkey and the Maghreb were being forced out due to the unsettled political situation[11]. The situation was not improved by attempts to place migrants in Australia or the USA since both countries limited the opportunities for new migration: by 1935 the department of labour stated that all migration possibilities for the Maltese were closed[12]. The reduction in migration opportunities led to a faster growing population.

In contrast to Malta, Cyprus was seen by the British administration as a target for immigration. In the 19th century a Maltese settlement was set up but it quickly failed. Other attempts followed: in 1902 plans were discussed to create an Armenian settlement in Cyprus with the aim of modernising

[8] Source: Bulgaria- Ivanov "Bulgarian National Income" (Unpublished) Table A.O; Turkey- Pamuk, "Intervention during the Great Depression-Another Look at Turkish Experience", Ch.12 in Pamuk and Williamson, *The Mediterranean…* (2000), p.321, Table 12.1; Greece - Kostelenos, *et al, Ακαθάριστο…* (2007), Table 8-Ib.

[9] See: Chapter 1, p.57, footnote 66

[10] Over £10,000 was spent to aid one hundred Maltese to migrate, but the global slowdown of migration opportunities in the new world meant that there were very limited migration possibilities, with many migrants returning to Malta. Annual migration was estimated as 1,876 people per annum with as many as 10% returning within a year. Bonnano., *Capital Accumulation…*(1989) p.19, p.23, p.16

[11] Bowen-Jones, H., Dewdney, J.C., & Fisher, W.B., *Malta: Background for Development* (Durham, Department of Geography, 1961), p.158

[12] National archives, London. File: CO161/123 "Report of the commissioner for labour for 1936-1937"

the island's agricultural sector[13]. Cyprus continued to be seen as a place of immigration, as well as a place of migration transit, by the colonial authorities during the interwar period, keeping net migration at very low levels. Cyprus was a key destination for "white army" Russian émigrés, Europeans ousted from Turkey and Jewish settlers on their way to Palestine. As a result net emigration was estimated at less than 1% of the total population[14].

Thus faster population growth was mainly due to the reduction of migration opportunities for the islanders. They were some improvements to the island's health systems that might have led to a reduction of the death rate, yet the health and sanitation systems were still basic, with Malta having one of the highest infant mortality rates in Europe and still experiencing outbreaks of cholera and plague[15].

The increase in population had direct repercussions for the standard of living on the islands. In order for the per capita GDP level to increase, output needs to increase faster than population. Thus the increase in the population created an additional pressure on the living standards of the population during a period of slow economic growth. However nearby states were sustaining a higher population growth and a faster economic growth, meaning that the poor per capita economic growth is also due to other reasons.

GDP at market prices

All estimates presented here are in factor prices as explained in chapter 2[16]. Market prices of 1938 are shown here for completeness. A way of evaluating possible double counting is the differential between the GDP in factor and market prices compared with government revenue. Since the main difference in factor and market prices is the indirect taxation set by the government, the differential should be less than the total government revenue[17]. Because the results presented in table 3.4 seem to indicate that some of the indirect tax is included in the factor price estimate, GDP at factor prices is used as the main indicator of economic growth to avoid double counting.

[13] Georghallides, *A Political…* (1979) p.39; Geddes, P. "Cyprus and Some of its possibilities" in *The Isle of Man, Gibraltar, Malta, St Helene, Barbados, Cyprus, The Channel Islands*, (London: Kegan Paul, Trench, Trubner & Co Ltd, 1902) pp.101-102

[14] Oakden, *Report on the Finances* (1935), p.9. The mass migration of Cypriots and Maltese to Britain and the Commonwealth was a post-Second World War phenomenon. Angelides, "The Cyprus Economy…" (1996) p. 219; Bowen-Jones, *et al*, *Malta: Background for Development* (1961) pp.158-159

[15] Bowen-Jones, *et al*, *Malta: Background for Development* (1961), pp.178-179

[16] See: Chapter 2, p. 53, Section "GDP at factor prices and market prices"

[17] Sir Ralph Oakden argued that it was not possible to estimate the total indirect taxation in government revenue due to the complicated taxation system. Oakden, *Report on the Finances* (1935) p.56

Table 3.4: GDP of 1938, Cyprus and Malta, in Factor and Market Prices.

	GDP at Factor Prices (1)	GDP at Market Prices (2)	Differential (2)-(1)=(3)	Government Revenue (4)	Indirect taxation on Value Added (%) (3)/(4)=(5)
Cyprus	6,544,460	7,091,589	547,129	1,023,230	53
Malta	7,416,814	8,084,281	667,467	1,287,191	52

Note: Cyprus is in constant 1938 Cyprus pounds; Malta is in constant 1938 pound sterling. Source: Appendix B and C.

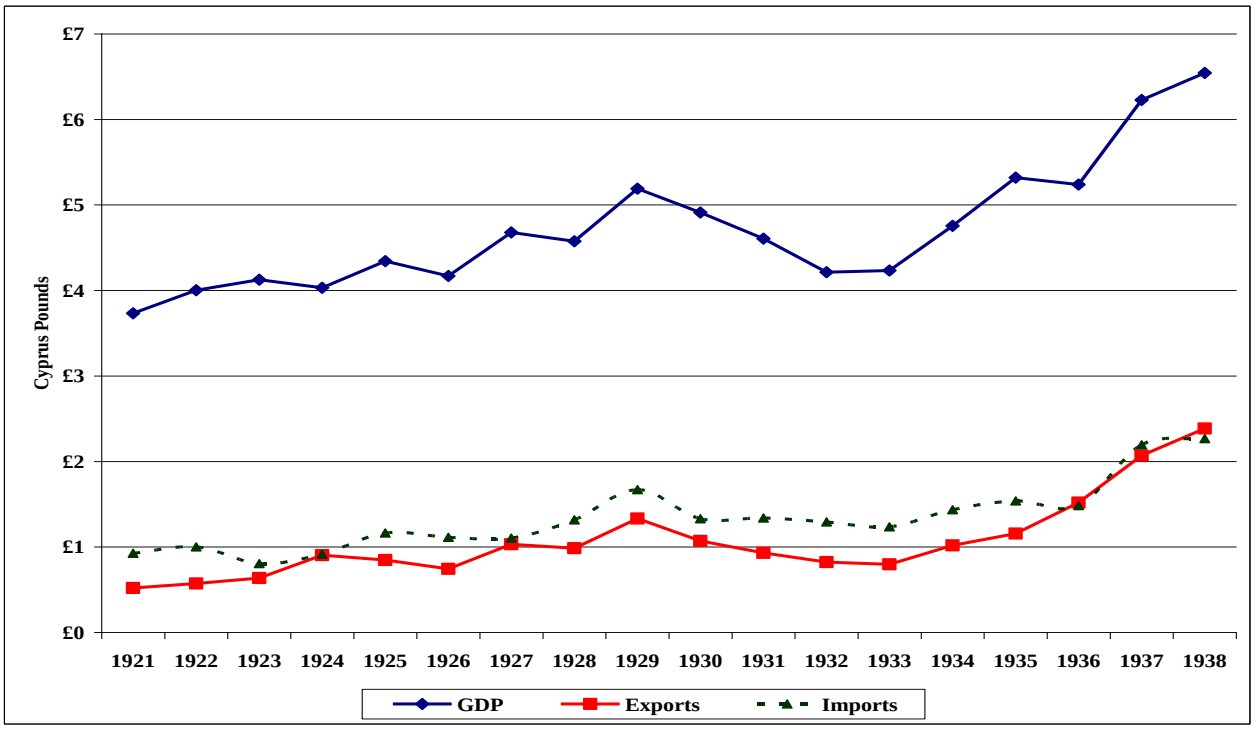
GDP at factor prices

Figure 3.1 indicates the GDP of Cyprus in the interwar period in constant 1938 Cyprus pounds. There was great volatility of aggregate output: this was due to the fact that agriculture constituted a large part of the economy and its output was dependent on the island's volatile weather. It must be noted that in 1921, the starting year of the estimates, was a year of worldwide recession that seriously affected the United Kingdom and its colonies[18]. The 1921 recession also affected Cyprus (and to a lesser extent Malta whose recession year was in 1919), as the price and volume of its agricultural exports dropped significantly[19].

Since 1921 was a recession year, the recovery from the slump in Cyprus was sluggish. Output growth was checked in 1924, and then went through violent expansions and contractions, reaching a peak in 1929. The great depression had a great impact on the economy of Cyprus, with GDP in 1932 being 18.8% lower than in 1929 with recovery only being achieved in 1935. The combined drought and the great depression led to a large and sustained fall of GDP. After a slight downturn in 1936, output increased rapidly during the last two years of peace.

[18] Feinstein, Temin & Toniolo, *The European Economy…* (1997), p.39
[19] Angelides, "The Cyprus Economy Under British Rule" (1996) p. 214.

Figure 3.1: GDP, Exports, Imports, Cyprus, 1921–1938.



Note: In constant 1938 million Cyprus pounds. Source: Table 3.5.

Considering that Cyprus had no heavy industry and was lacking in most natural resources, the trade openness of the island was low. The combined proportion of imports and exports was at its lowest in 1923 (35.0% of GDP), but rose to 71.1% by 1938. The increase in trade openness was due to the explosive growth of the Cyprus Mines Corporation (CMC). The company imported all of the machinery needed for production, and exported large amounts of copper pyrites to Germany at the end of the 1930s, thus breaking down the self-sufficient nature of the Cypriot farm-based economy.

Despite the relatively low trade openness of Cyprus, the correlation coefficient of GDP with imports (0.95) and exports (0.97) was very high. Thus the movements of imports and exports are good indicators of the state of the economy overall, which is of use to further HNA studies of the island. The high correlation of trade to GDP was mainly due to the currency board system of sterling exchange. The commissioner of currency issued Cyprus notes on condition that the equivalent amount in sterling was lodged with the crown agents in London, making demand and supply of trade dependent on the wellbeing of the economy[20].

[20] For an explanation of the Cypriot monetary system: Phylatkis, K., *The Banking System of Cyprus: Past, Present and Future* (London: Macmillan, 1995), pp.42-44

Table3.5: GDP, imports, exports, Cyprus, 1921-1938.

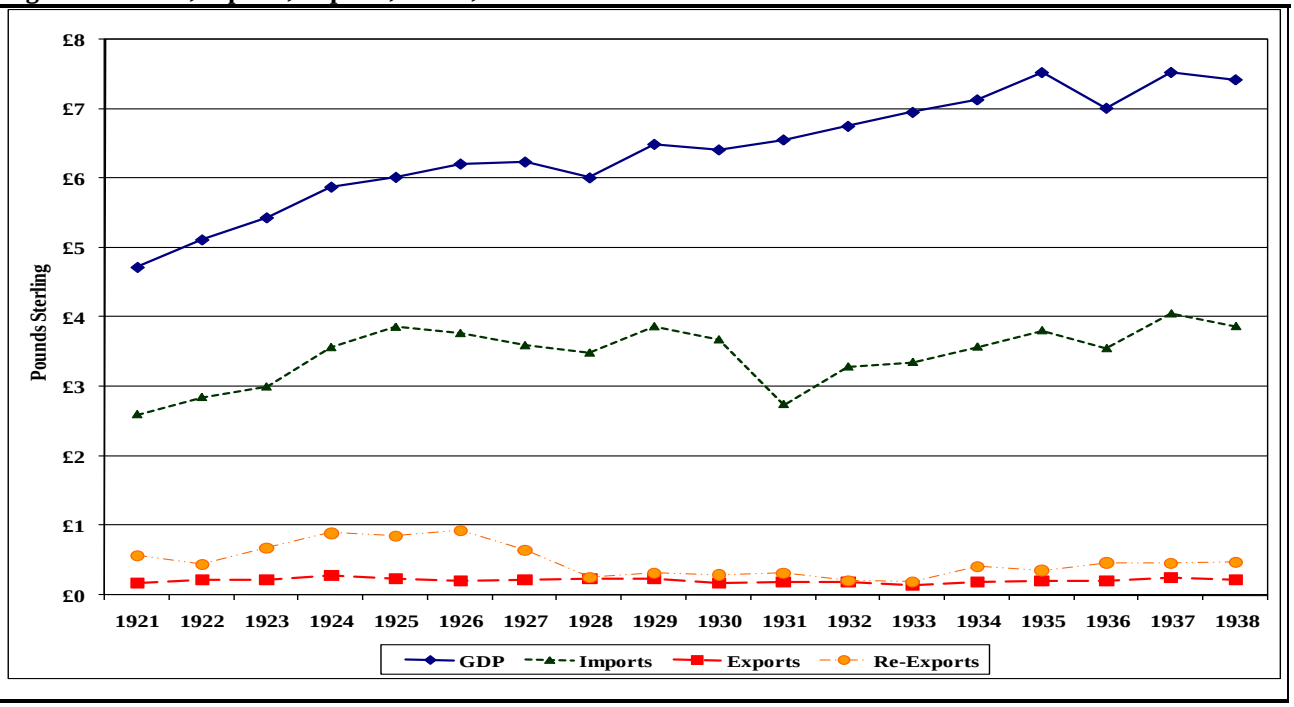
	GDP	Imports	Exports
1921	3,732,544	926,625	520,519
1922	4,001,854	1,001,137	572,935
1923	4,125,691	806,076	636,845
1924	4,029,952	914,858	904,673
1925	4,342,975	1,162,627	847,314
1926	4,169,484	1,111,652	744,163
1927	4,678,897	1,103,766	1,030,349
1928	4,574,781	1,315,656	984,934
1929	5,189,706	1,670,070	1,331,550
1930	4,911,844	1,329,007	1,070,103
1931	4,605,234	1,338,918	930,556
1932	4,213,399	1,292,490	822,245
1933	4,232,438	1,234,848	796,451
1934	4,755,859	1,435,596	1,017,667
1935	5,318,422	1,537,664	1,155,342
1936	5,237,377	1,483,244	1,518,462
1937	6,226,713	2,193,544	2,069,726
1938	6,544,460	2,267,204	2,386,303

Note: In constant 1938 million Cyprus pounds. Source: Appendix B.

Figure 3.2 shows the aggregate output, exports and imports of Malta in constant 1938 pounds sterling. The growth performance of Malta is very different to that of Cyprus. Malta suffered its worst economic recession in 1919 due to the sudden reduction in military expenditure during demobilisation; by 1921 a gradual recovery was underway[21]. The recovery continued until 1927 but growth was slowing down, leading to a mild recession in 1928.

[21] See: Chapter 1, p.21, footnote 65.

Figure 3.2: GDP, exports, imports, Malta, 1921-1938.



Notes: In constant 1938 million pounds sterling. Source: Table 3.6.

The onset of the Great Depression (1929-1933) had a very limited effect on Malta. The global reduction of trade and output seemed to further slow down Malta's economic growth. Perhaps uniquely in Europe, Malta had positive GDP throughout the period of the great depression. The greatest effect of the depression was on the re-exporting business in Malta, which did not recover to the pre-depression levels.

This unusual output trend exhibited by Malta was due to its high dependence on British military expenditure: Malta was not dependent on the global economy for its prosperity. The very large imbalance of exports and imports shown in table 3.6 indicates that Malta was reliant on indirect trade, namely military expenditure from Britain, in order to fund its large current account deficit. Such indirect income flows had declined from the peak of the First World War, but remained relatively stable during the 1920s and early 1930s[22].

Military expenditure in the interwar period did not provide the prosperity that it bestowed to Malta during the First World War. Although the total military expenditure spent in Malta could not be calculated, general British defence expenditure was gradually curtailed during the period 1919-

[22] Military expenditure was slowly declining but at a slow rate: Bond, B. & Williamson, M. "The British Armed Forces 1818-1939" in Millet, A.R. & Williamson, M. (eds.) *Military Effectiveness, Vol.II: The interwar period* (London: Allen & Unwin, 1988) pp.98-131, p. 101; Eloranta, J., "Military Spending in History", http://eh.net/encyclopedia/eloranta.military as consulted 2 Feb 2009, Table 3.

1936[23]. In addition the Mediterranean had a lower priority in interwar strategic planning than other theatres, resulting in a gradual reduction of the defence capabilities of Malta, due to expenditure being diverted in military sectors, leading to a decline in military expenditure on the island[24]. This reduction must have been severe if judged by the very poor state of Malta's defence readiness at the start of the Second World War: the island had no offensive or defensive air capability, the capital ships in the grand harbour were outdated and the army's capability of resisting an invasion was minimal.[25]. Since the level of British military expenditure was the largest determinant of Maltese economic performance, the very gradual growth in the GDP of Malta in the 1930s was linked to the reluctance of Britain to re-arm in a substantial way until 1937[26]. Malta was affected more by British military decisions than by global trade conditions.

It is not surprising that the greatest decline in output in Malta took place during the Abyssinia crisis in 1936. The imminent threat of war with Italy led to the decision by the Royal Navy to move its base from Malta to Alexandria, with an immediate repercussion to the Maltese GDP[27]. A recovery did take place in 1937 as the crisis was abated and the fleet returned to Malta, while at the same time the British remilitarisation expenditure began to trickle into the island.

The correlation of trade to GDP is not high: unlike Cyprus, changes in trade do not provide information on the change in output, mainly due to the Maltese economy's relation to British military inflows. The highest the correlation coefficient of GDP is to exports at 0.65, despite exports representing such a small proportion of output. The correlation of GDP to imports (-0.13) and re-exports (-0.40) is negative and low.

[23] For a exposition of the British armed forces strategy during the period see: Bond, & Williamson, "The British Armed Forces 1818-1939" (1988) pp.98-131, p. 101
[24] Pratt, *East of Malta, West of Suez* (1975), p10
[25] Ibid. p.11; pp.120-121
[26] Coghlan, F. "Armaments, economic policy and appeasement. Background to British foreign policy, 1921–7" *History* Vol.57 (2007) pp.205-216, pp.212-213; Eloranta, "Military Spending in History".
[27] Pratt, *East of Malta, West of Suez* (1975) pp.120-121

Table 3.6: GDP, imports, exports, Malta, 1921-1938.

	GDP	Imports	Exports	Re-exports
1921	4,725,551	2,601,150	167,377	564,258
1922	5,119,876	2,848,907	223,280	442,565
1923	5,436,448	3,000,158	226,265	677,067
1924	5,876,981	3,566,573	284,804	889,214
1925	6,017,227	3,860,043	242,159	853,491
1926	6,208,017	3,768,859	198,812	928,223
1927	6,237,203	3,593,759	227,212	642,299
1928	6,009,303	3,488,325	238,682	247,096
1929	6,490,731	3,866,877	243,410	317,087
1930	6,411,082	3,677,904	172,375	290,622
1931	6,554,176	2,747,559	194,208	310,920
1932	6,749,173	3,288,101	180,542	205,482
1933	6,949,134	3,354,016	138,178	190,200
1934	7,129,401	3,574,943	180,587	412,056
1935	7,520,138	3,809,418	199,368	354,618
1936	7,008,544	3,551,822	199,918	463,721
1937	7,522,168	4,052,167	252,598	452,975
1938	7,416,814	3,869,606	219,114	471,077

Notes: In constant 1938 pounds sterling. Source: Appendix C.

Malta was more open to trade than Cyprus at the beginning of the period. Trade openness (the sum of exports, re-exports and imports) was 58.6% of GDP in 1921, reaching a peak of 68.2% in 1925 before falling back to 55.1% in 1938[28]. However, trade openness was still low, considering that Malta had to import all of the inputs for the Royal Navy Dockyard, as well as most of the food needed for the population and the British crewmen posted to the island.

Malta's exports were minimal. The ratio of exports to imports was less than 8%, with exports never exceeding 5% of GDP. It is clear that the trade deficit was only sustainable due to the great inflow of British military expenditure. The lack of substantial exports helped cushion the blow of the great depression: the impact on Maltese exports did not affect the economy to any great extent, especially since the decline in world food prices allowed for a fall in the value of imports without a decline in the quantity of food imported.

[28] The trade openness indicator increases to 71.6% in 1921, reaching a peak of 82% in 1924 with the addition of re-exports.

Table 3.7: Exports, re-exports to total imports, Malta, 1921-1938.

Year	Imports (1)	Exports (2)	Re-exports (3)	Exports to Imports (%) (1)/(2)	Re-exports to Imports (%) (3)/(1)
1921	3,723,814	239,617	807,793	6.4	21.7
1922	3,673,356	287,895	570,639	7.8	15.5
1923	3,841,793	289,739	867,005	7.5	22.6
1924	4,416,423	352,668	1,101,098	8.0	24.9
1925	4,495,966	282,054	994,099	6.3	22.1
1926	4,539,037	239,440	1,117,908	5.3	24.6
1927	4,285,514	270,947	765,934	6.3	17.9
1928	3,999,109	273,631	283,277	6.8	7.1
1929	4,041,926	254,429	331,441	6.3	8.2
1930	3,836,260	179,797	303,135	4.7	7.9
1931	2,714,530	191,873	307,182	7.1	11.3
1932	3,319,207	182,250	207,426	5.5	6.3
1933	3,481,862	143,445	197,450	4.1	5.7
1934	3,469,055	175,238	399,851	5.1	11.5
1935	3,770,483	197,330	350,994	5.2	9.3
1936	3,466,217	195,100	452,545	5.6	13.1
1937	4,019,569	250,566	449,331	6.2	11.2
1938	3,869,606	219,114	471,077	5.7	12.2

Note: In current pounds sterling. Source: Malta, *Statistical (Blue) Books*, (1921-1938)

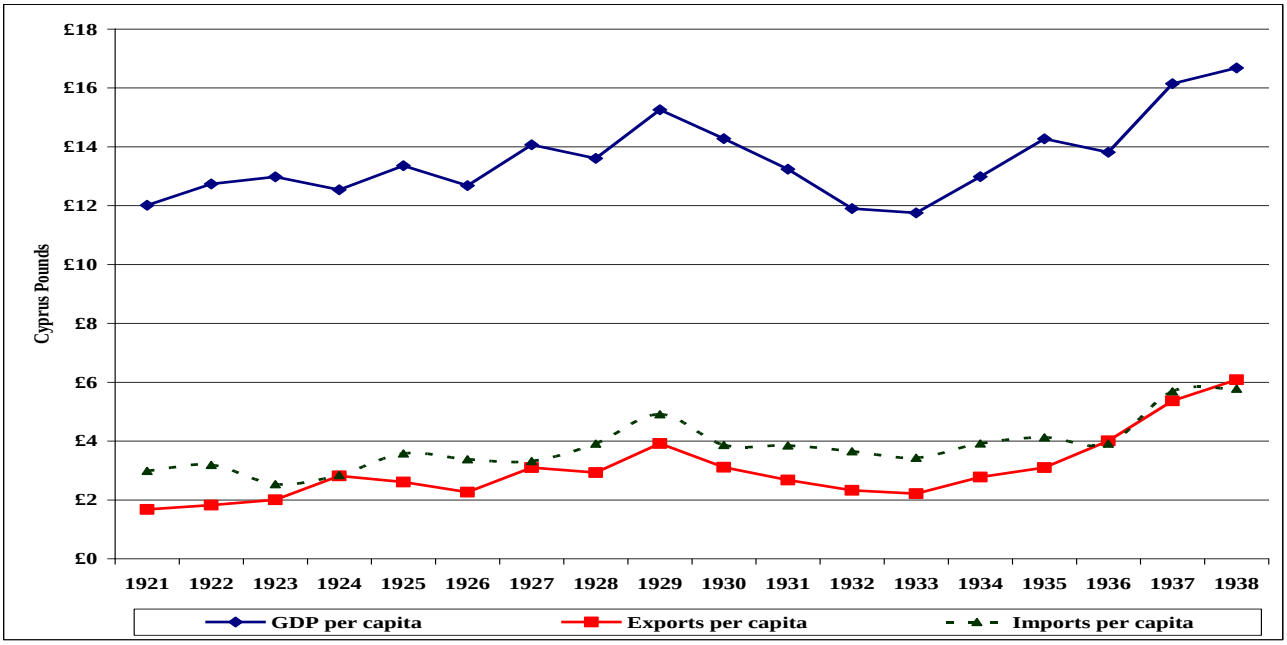
Per capita GDP at factor prices

Figure 3.3 shows the per capita GDP, imports and exports of Cyprus for the period 1921-1938. The per capita GDP highlights the poor economic performance of the island: the increase of the population in Cyprus put pressure on output, making it difficult for Cyprus to maintain positive economic growth[29].

The combination of the great depression and the serious drought of 1931-1933 wiped out all per capita economic growth since 1921. Per capita GDP in 1932-1933 was less than in 1921, which was a year of severe recession in Cyprus. Thus any economic frustrations of the Cypriot during the October 1931 riots were understandable, as the depression wiped out ten years of economic growth and progress, with Cypriots being on average worse off than the recession of 1921.

[29] See: Chapter 3, pp.55-58, Section " Population estimates"

Figure 3.3: Per Capita GDP, Exports and Imports, Cyprus, 1921-1938.

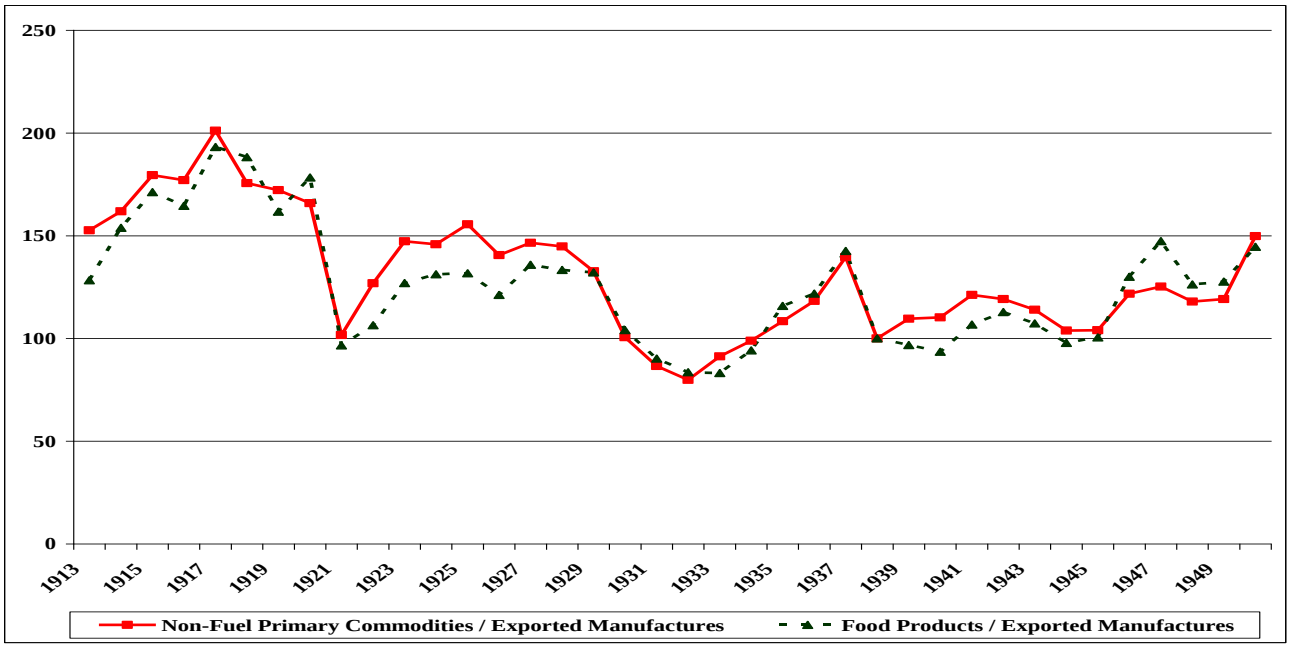


Note: In constant 1938 Cyprus pounds. Source: Table 3.2; Appendix B.

The great depression led to four years of recession in Cyprus with per capita GDP in 1933 being 23% lower than its 1929 level. The combined effects of a serious and prolonged drought and the trade depression resulted in a severe reversal of output and thus of average income, especially for the rural majority. It is worth noting that figure 3.3 charts the decline in constant prices, yet the fall of output in current prices was much more serious, with dramatic effects to the agricultural industry. Figure 3.4 indicates that the global prices of agricultural goods declined faster than the prices of manufactured products, and this was no different in Cyprus, as indicated by the substantial price decline of the main agricultural products seen in table 4.5 with wheat and carobs, two important products in agriculture, also experiencing even more dramatic falls. The consumer price index declined by 64% from 1921 to 1934, and prices of key products did not recover by 1938; food prices declined even further, falling by 85% and remaining at low price levels until 1938[30]. Thus the terms of trade moved against the value of the main products of Cyprus, at a time when the drought was reducing the output of these products: the simultaneous reduction of volume and price brought about a 'perfect storm' of declining values and volumes of agricultural output, leading to a tremendous decline in the incomes of Cypriot farmers. Rural Cyprus experienced very serious hardship during the period 1929-1934.

[30] Source: Consumer Price Index, Appendix H.

Figure 3.4: Global index of prices of agricultural products relative to manufactures, 1913 -1950 (1938 = 100).



Source: Grilli, E. R and Yang M. C. "Primary Commodity Prices, Manufactured Goods Prices, and the Terms of Trade of Developing Countries: What the Long Run Shows" *The World Bank Economic Review*, (1988), issue. 2, no.1, pp.1-47, Appendix 1.

Overall, the development of Cyprus in the period was poor, considering that the starting year was one of recession. The results fit in with the historiography of Cyprus' development. They help explain the disagreement between the optimists and the pessimists on Cypriot economic development. Optimists were looking at the end of the 1930s and the rapid increase of output, while historians interested in the long-term welfare of the population were pessimistic due to the slow recovery of per capita income after the 1921 recession.

Per capita income data vindicate historians who are pessimistic about Cypriot development during the interwar period. Although the optimists can point out that the average growth rate would double the income of Cyprus in 36 years, the pessimists can show that the growth rate was less that of than other Mediterranean countries (table 3.13), and much lower than the island's post-1945 rates of growth. The variability of its economic growth was very detrimental to welfare of the population, since the violent fluctuations in output had a disproportionate negative effect on the agricultural sector, which was mainly comprised by small landowners with limited means.

However, the Cypriot economy participated fully in the European recovery from 1935 to 1938. As chapter 5 will indicate, the recovery did not percolate to the large rural base of the population in Cyprus as the recovery was due to a rapid expansion of the copper mining sector. The rapid increase in mining output did not generate sufficient jobs to alleviate the stagnation in farming output. In

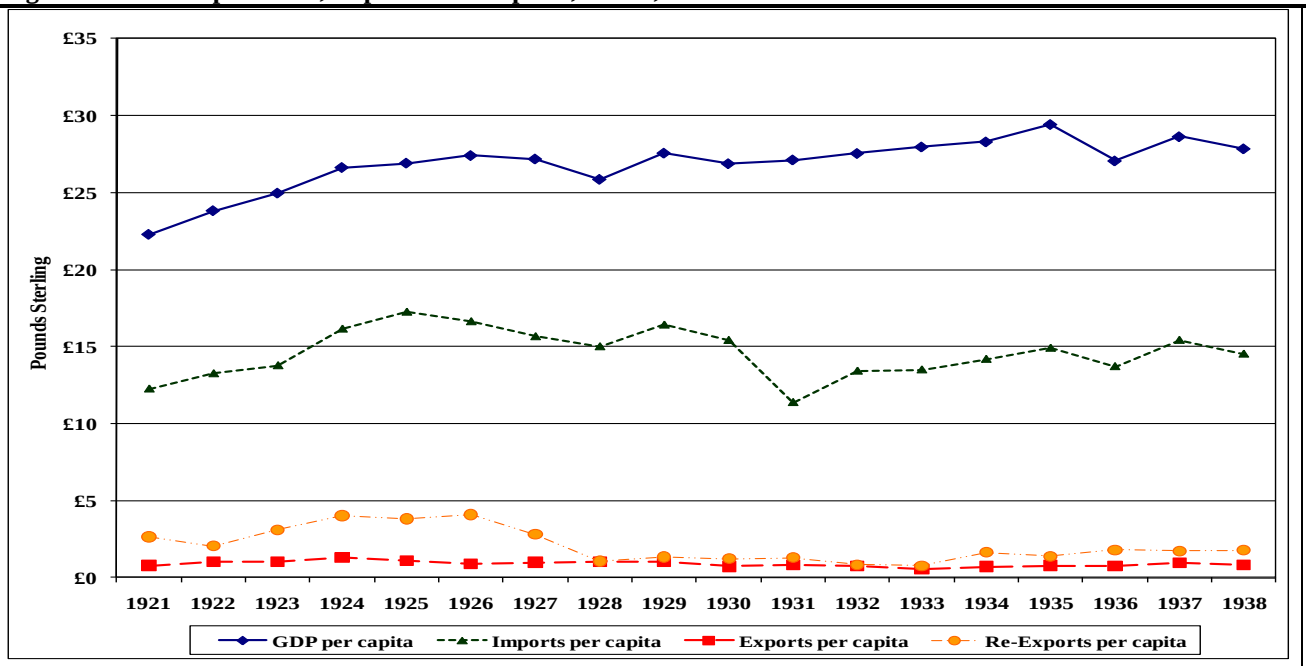
addition the large profits expatriated by foreign mining firms indicate that the recovery was smaller in terms of GNP than the GDP estimates suggest.

Figure 3.1 can be used to check opinions expressed by historians and interwar contemporaries. Georghallides was wrong to state that the national income had been falling from the end of 1928 to the end of 1929 by 20%, since 1929 was a peak year in terms of GDP in Cyprus, with the economy performing better than either 1928 or 1930[31]. The governor of Cyprus was wrong to be so optimistic about signs of recovery in 1931, since the economy remained in recession until 1934. Oakden was correct in arguing that there was gradual growth until 1929, and that Cyprus was still in bad shape in 1934[32]. Lanitis argued that the economic recovery was well under way in 1936, but the GDP estimates argue that although the recovery was rapid in 1937, 1936 was a year of recession[33]. Christodoulou argues that the impact of the great depression was a decline in GDP of 18% from its 1927 level which he considered a peak of the pre-depression output. Yet the peak-to-trough decline in per capita GDP was larger at 23%[34]. Angelides argued that the economy was largely stagnant in the 1930s, yet GDP in 1938 was substantially higher than in 1930, even if the majority of the rural population might have not felt the benefits[35].

Figure 3.5 shows the per capita GDP of Malta. The economic growth during the period 1921 to 1938 was slow, with a doubling of income every 51 years. As in Cyprus the per capita GDP of Malta indicates that output was just creeping ahead of the growing population, despite Malta's slower population growth rate.

[31] Georghallides, *Cyprus and the Governorship…* (1985) p.327
[32] Oakden, *Report on the Finances* (1935) p.23
[33] Lanitis, *Rural Indebtedness…* (1944; revised 1992) pp.39 - 40
[34] Source: Appendix B; Christodoulou, *Inside the Cyprus Miracle* (1992) p.xxxi
[35] Angelides, "The Cyprus Economy Under British Rule " (1996) pp.214-215

Figure 3.5: Per Capita GDP, Exports and Imports, Malta, 1921-1938



Note: In constant 1938 Pounds Sterling. Source: Table 3.2; Appendix C.

Figure 3.5 confirms that Malta did not experience a reduction in output during the great depression in per capita terms: its economic performance was different from that of Cyprus or any other Southern European country. The very different economic structure of Malta led to its unusual performance: its economic growth was dependent on British defence expenditure inflows which isolated it from global economic downturns. Unlike Cyprus, Malta was not experiencing a deep recession in 1930 when the acute political disturbances led to the Maltese constitution to be suspended. The remaining chapter will confirm that the islands dependence on British defence expenditure compromised its economic growth, experiencing income stability at the expense of prosperity.

The stability meant that Malta did not participate in the European recovery after the great depression, despite the rapid recovery of other countries within the sterling bloc[36]. As a result Malta's per capita output in 1938 was just 14.3% higher than in 1929, while in Cyprus the corresponding figure was 26.1%.

The per capita GDP estimate confirms Bonnano's view of the 1920s as a good time for the Maltese economy, due to the lack of volatility, but neither Bonnano nor Abela seemed to understand that the per capita GDP growth was close to being stagnant during the interwar period[37].

[36] Feinstein, Temin & Toniolo, *The European Economy…* (1997), pp.170-171
[37] Bonnano, *Capital Accumulation…*(1989), pp.15-16; Abela, *Malta, A Developing Economy* (1963) p.3

Purchasing power parity

GDP at factor prices for Cyprus and Malta was calculated in the currencies used on the islands at the time: in Cyprus pounds and in pounds sterling in Malta. A comparison of GDP levels in the two economies requires their conversion to a common denominator.

The GDP of the two countries is compared by using exchange rates, a consumer goods basket and a GDP deflator in order to establish the purchasing power differential and count the Cypriot GDP in the Maltese price level.

Firstly the economies are compared using exchange rate conversion. The Cyprus pound was controlled by a strict currency board system similar to other British colonies, where the board was obliged to keep the Cyprus pound at a fixed parity with the pound sterling[38]. It held sufficient reserves in sterling to cover all Cypriot notes and coins and thus the exchange rate of the Cyprus pound to the pound sterling was very stable[39]. The comparison of the two economies on the exchange rate basis essentially converts Cypriot pounds to sterling at parity. On an exchange rate basis, the Maltese GDP was 11.8% higher in 1938, despite having a smaller population than Cyprus.

Table 3.8: GDP of Cyprus and Malta based on exchange conversion, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	4,725,551	3,732,544	1930	6,411,082	4,911,844
1922	5,119,876	4,001,854	1931	6,554,176	4,605,234
1923	5,436,448	4,125,691	1932	6,749,173	4,213,399
1924	5,876,981	4,029,952	1933	6,949,134	4,232,438
1925	6,017,227	4,342,975	1934	7,129,401	4,755,859
1926	6,208,017	4,169,484	1935	7,520,138	5,318,422
1927	6,237,203	4,678,897	1936	7,008,544	5,237,377
1928	6,009,303	4,574,781	1937	7,522,168	6,226,713
1929	6,490,731	5,189,706	1938	7,416,814	6,544,460

Note: In constant pound sterling of 1938. Source: Appendix B and C.

However, such a comparison is not representative of the true GDP level due to the different prices for goods between the islands. Lower prices in Cyprus meant that the average income of the Cypriot would be higher than suggested in table 3.8[40]. Thus the differential in prices from the point of view of the average consumer was factored in: the above comparison has been adjusted through the price differential of an identical basket of consumer goods in the two economies.

[38] Phylaktis, *The Banking System of Cyprus* (1995), p.42

[39] Ibid, p.43. The exchange was kept within very narrow bounds: in the period 1921-1938 the largest monthly deviation from par was 0.5%. Source: Cyprus, *Statistical (Blue) Books* (1921-1938).

[40] Varchris, M.A & Thomas, J., "International price comparisons based on purchasing power parity" *Monthly Labour Review*, Volume 122, (October 1999), pp.3-12, p.4

In 1938 the Maltese government initiated a survey on the nutrition of the Maltese population[41]. The survey recorded the weekly expenditure and nutrition pattern of fifty Maltese families. Using the average volumes consumed of each item, the value of the weekly food and fuel budget was estimated using Maltese and Cypriot prices. Thus the food budget of the average Maltese was used to compare the price differential with Cyprus for the benchmark year of 1938[42]. Consumer prices in Malta were more expensive than those in Cyprus, raising the Cypriot GDP by 18.5% as shown in table 3.9.

Table 3.9: GDP of Cyprus and Malta, adjusted by a consumer basket, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	4,725,551	4,423,604	1930	6,411,082	5,821,245
1922	5,119,876	4,742,775	1931	6,554,176	5,457,868
1923	5,436,448	4,889,540	1932	6,749,173	4,993,487
1924	5,876,981	4,776,076	1933	6,949,134	5,016,051
1925	6,017,227	5,147,053	1934	7,129,401	5,636,380
1926	6,208,017	4,941,442	1935	7,520,138	6,303,098
1927	6,237,203	5,545,169	1936	7,008,544	6,207,049
1928	6,009,303	5,421,776	1937	7,522,168	7,379,555
1929	6,490,731	6,150,552	1938	7,416,814	7,756,131

Note: In constant pound sterling of 1938. Source: appendix B and C.

However, adjusting for the prices of the average food and fuel budget is not representative of the prices in an economy as a whole. The different structures of the two economies made it possible that Cyprus had lower prices than Malta in food products, but higher prices in other sectors[43]. In order to discount this factor the purchasing power parity (PPP) was also estimated using a GDP deflator.

The methodology is based on the work of Bassino and Var der Eng[44]. The output of Malta was estimated using Cypriot prices and the output of Cyprus was estimated using Maltese prices for the benchmark year. Thus the prices of each country are weighted by the volumes of the comparison country in order to take into account their differences in economic structure.

[41] National Archives, Rabat. File: GMR 1368, "Report of the commission approved to inquire and report on the question of nutrition in Malta & Gozo" Appendix A & B.
[42] It was not possible to estimate non-food items as the description of the items was not specific enough to allow a comparison with similar items in Cyprus.
[43] See: Chapter 3, pp. 78-84,"Sector Breakdown of GDP"
[44] Bassino, J.P & Van der Eng, P. "Economic Divergence in East Asia: New Benchmark Estimates of Levels of Wages and GDP, 1913-1970" *XIII IEHC, Buenos Aires* (2002), p.2, p.4

Thus:

$$PPP_{iC} = \sqrt{\frac{\Sigma(P_{iM}Q_{iC})}{\Sigma(P_{iC}Q_{iC})} \times \frac{\Sigma(P_{iM}Q_{iM})}{\Sigma(P_{iC}Q_{iM})}} \quad (4)$$

where:

$PPP_{iC} = Purchasing\ power\ parity\ of\ the\ Cyprus\ pound\ to\ the\ pound\ sterling\ in\ Malta\ for\ the\ benchmark\ year$

$P_{iM} = Price\ of\ item\ i\ in\ Malta$

$P_{iC} = Price\ of\ item\ i\ in\ Cyprus$

$Q_{iM} = Quantity\ of\ item\ i\ in\ Malta$

$Q_{iC} = Quantity\ of\ item\ i\ in\ Cyprus$

It was not possible to match all of the quantities of Cyprus with the prices of Malta or vice versa, due to limited comparative price data. Overall 55% of the Maltese and Cypriot total output was matched, the majority of which was in the agriculture, quarrying, construction and service industries. The resulting purchasing power parity ratio indicated that the general price level in Malta was substantially higher in all sectors. Thus in order to establish Purchasing Power Parity, the GDP of Cyprus increased by 178%. Thus all Cypriot GDP estimates were multiplied by that factor to produce Cypriot GDP in pound sterling as adjusted to the Maltese price level. This allows for level comparisons between Cyprus and Malta. Thus, comparing the GDP of Cyprus and Malta on an exchange rate basis is grossly misleading: in PPP terms, the aggregate output of Malta was 36.4% less than that of Cyprus in 1938.

Table 3.10: GDP, Cyprus and Malta, PPP adjusted, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	4,725,551	6,646,683	1930	6,411,082	8,746,707
1922	5,119,876	7,126,253	1931	6,554,176	8,200,715
1923	5,436,448	7,346,775	1932	6,749,173	7,502,960
1924	5,876,981	7,176,289	1933	6,949,134	7,536,863
1925	6,017,227	7,733,700	1934	7,129,401	8,468,938
1926	6,208,017	7,424,759	1935	7,520,138	9,470,715
1927	6,237,203	8,331,890	1936	7,008,544	9,326,395
1928	6,009,303	8,146,485	1937	7,522,168	11,088,144
1929	6,490,731	9,241,507	1938	7,416,814	11,653,968

Note: In 1938, PPP, pounds sterling. Source: appendix B (PPP adjusted) and C.

The per capita, PPP, GDP in Malta and Cyprus in table 3.11 indicate that the per capita income level was quite similar throughout the interwar period due to the lower population in Malta. Contrary to Clark's estimation, Malta was not substantially ahead in terms of per capita GDP,

despite being more urbanised than Cyprus[45]. The slow growth of per capita GDP in Malta meant that Cyprus overtook Malta in per capita GDP, but the Maltese did not suffer the repeated recession felt by the Cypriots.

Table 3.11: Per capita GDP, Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Cyprus	Malta
1921	21.4	22.3	1930	25.4	26.9
1922	22.7	23.8	1931	23.6	27.1
1923	23.1	25.0	1932	21.2	27.5
1924	22.3	26.6	1933	20.9	28.0
1925	23.8	26.9	1934	23.1	28.3
1926	22.6	27.4	1935	25.4	29.4
1927	25.1	27.2	1936	24.6	27.1
1928	24.2	25.9	1937	28.7	28.6
1929	27.2	27.6	1938	29.7	27.9

Note: In 1938, PPP, pounds sterling. Source: appendix B (PPP adjusted) and C, Table 3.2.

The fact that Malta did not have a higher per capita GDP level than Cyprus before the Second World War is important, as the national accounts of the Malta for in 1954 indicate that the island's per capita GDP was 17.6% lower than that of Cyprus[46]. Thus the belief of a higher income level in Malta in the interwar period was based on the assessment of British officials who found amenities not present in Cyprus but failed to take account of the general poverty of the population. It would be very difficult for Malta to have had a higher income in 1938 as in PPP terms the per capita GDP of Malta in 1950 was 53.6% lower than that of Cyprus; thus for this to be true Cyprus would have to grow at an implausible rapid rate in the middle of War[47].

Although they are not estimated of output for the 1940s the results confirm that the transformation of the Cypriot economy took place during that decade. Cyprus benefited by being integrated in the nearby markets through the Middle East Supply Centre during the war, while Malta suffered a prolonged siege and blockade that caused considerable hardship and damage, leading to a significant decline in income[48]. In addition the Second World War increased Cyprus' strategic importance, while downgrading Malta's, thus further opening the income gap between Cyprus and Malta.

The GDP estimates on purchasing power parity can be used as a base for converting the constant prices of 1938 into internationally comparative units. However such a comparison necessitates a

[45] See: Chapter 2, p. 32, footnote 19

[46] However, the comparison is flawed as it was based on exchange rate parities. Source: Central Office of Statistics, Malta, *National Accounts of the Maltese…* (1964), Appendix 3

[47] Source: Groningen Growth and Development Centre, *Total Economy Database*, (2006)

[48] Wilmington. M.W., *The Middle East Supply Centre* (Albany: State University of New York Press, 1971) p.4; Castillo, *The Maltese Cross* (2006) p.159, p.217

long term price series, which does not currently exist. More research is necessary prior to the creation of such a robust price series, since the existing price indexes use different baskets of goods and benchmark years, and quite often an index series ends before a new series begins, creating data gaps.

Nevertheless an attempt has been made to make the estimates internationally comparative as explained in appendix H. It entails converting the Cypriot estimates that were in constant 1938 Cyprus pounds to constant prices of 1950. This enables a conversion of the estimates to the international measures used by Maddison and by the Penn World Tables[49]. The estimates suffer from significant index number problems due to the necessary assumptions made in order to bridge price indexes that had differing benchmark years. In addition the estimates in Geary-Khamis dollars seem to suffer additional problems due to the misrepresentation of the GDP of Malta in the 1950s as explained in the appendix.

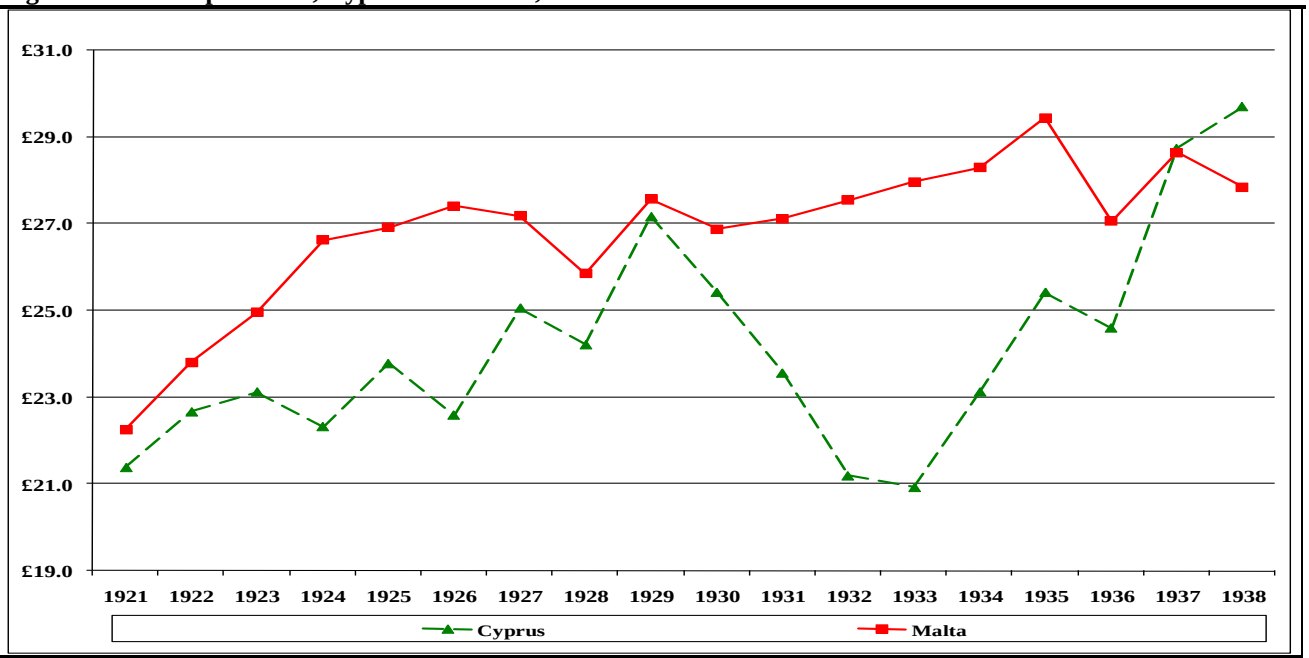
Despite the problems in converting the GDP estimates to internationally comparative units, the results inspire confidence in the estimated income of Cyprus and Malta. In 2005 international dollars, the per capita GDP of Malta and Cyprus in 1938 was I$1,693 and I$1,588 respectively. This implies that the average income in Cyprus and Malta in 1938 was higher than the per capita income in Egypt (I$1,298) and lower than that of Turkey (I$1,680) in 1950[50].

In Geary-Khamis 1990 dollars the per capita GDP of Cyprus and Malta in 1938 is GK$1,260 and GK$1,160 respectively. Thus the islands were poorer than what was previously thought as the per capita GDP of Turkey in 1938 was substantially higher at GK$1,724[51]. This is contrary to the view of Madison who estimated the joint per Capita GDP of Cyprus and Malta in 1929 as GK$1,727, placing Cyprus and Malta at a higher income level than Turkey[52]. In fact the joint GDP of Cyprus and Malta was only GK$1,139, 34% less than Maddison's[53]. The joint estimate of Cyprus and Malta for 1929 would place the islands in the Maddison dataset in same income bracket as Bulgaria (GK$1,180) and Romania (GK$1,152), and behind Turkey (GK$1,213) and Greece (GK$2,342)[54].

[49] The estimates were converted to 1990 Geary-Khamis Dollars (Maddison) and 2005 international dollars (Penn World Tables).
[50] Source: Appendix H
[51] Pamuk, "Estimating Growth in the Middle East since 1820", (2006) p.815, Table 1.
[52] Maddison, *Monitoring the World Economy* (1995) p.224
[53] Source: Appendix H
[54] Maddison, *Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD*, http://www.ggdc.net/maddison as accessed 9 March 2009

The interwar per capita GDP of Cyprus and Malta can also be compared with the islands' post-1945 performance, which is considered as one of the most successful development catch-ups in Europe[55]. Malta's per capita GDP grew by 4.1% per annum in 1955-1963; post-war growth was particularly rapid in Cyprus, with per Capita GDP growing by 4.7% per annum from 1950 to 1959[56]. The rates of growth during the interwar period were much lower. Thus, the economic growth experienced by the islands before and after the Second World War was centred on different trends: the post-war performance of the islands was not simply a continuation of interwar trend, but a new phase of economic growth.

Figure 3.6: Per capita GDP, Cyprus and Malta, 1921-1938.



Note: In 1938, PPP, pounds sterling. Source: table 3.11.

[55] Crafts. "The Great Boom…" (1998), p.43

[56] Source: Central Office of Statistics, Malta, *National Accounts of the Maltese Islands* (1964) p.12; Republic of Cyprus, *Statistical Pocket Book, no.2* (1980) p.18

Growth and cross-country comparisons

Table 3.12 emphasises how the volatile was the interwar period, with Cyprus facing seven years of recession, with Malta experiencing five in a seventeen year period. Although Maltese output was more stable than Cypriot output, the decline in output in 1929 and 1936 would be considered as major recessions today.

Table 3.12: Yearly per capita GDP growth, Cyprus and Malta, 1921-1938.

Year	Malta		Cyprus	
	GDP (%)	Per Capita (%)	GDP (%)	Per Capita (%)
1921–1922	8.3	6.9	7.2	6.0
1922–1923	6.2	4.8	3.1	1.9
1923–1924	8.1	6.7	-2.3	-3.4
1924–1925	2.4	1.1	7.8	6.6
1925–1926	3.2	1.8	-4.0	-5.1
1926–1927	0.5	-0.8	12.2	11.0
1927–1928	-3.7	-4.9	-2.2	-3.3
1928–1929	8.0	6.6	13.4	12.2
1929–1930	-1.2	-2.5	-5.4	-6.4
1930–1931	2.2	0.9	-6.2	-7.3
1931–1932	3.0	1.6	-8.5	-10.1
1932–1933	3.0	1.5	0.5	-1.3
1933–1934	2.6	1.2	12.4	10.5
1934–1935	5.5	4.0	11.8	9.9
1935–1936	-6.8	-8.1	-1.5	-3.2
1936–1937	7.3	5.8	18.9	16.9
1937–1938	-1.4	-2.8	5.1	3.3
1921–1938	2.7	1.3	3.4	1.9
1921–1929	3.5	2.1	3.1	1.9
1930–1938	1.8	0.4	3.7	2.0
GDP Peak to Peak (1925-1937)	1.9	0.6	3.0	1.6

Note: In 1938, PPP, pounds sterling. Source: see appendix B and C.

In order to minimise issues of cross-country comparability, one compares per capita GDP growth rather than per capita GDP levels, as this eliminates errors in GDP levels and allows comparison between GDP estimates that were constructed using a different production possibility frontier. Thus one is not measuring how advanced an economy was in relation to another, but whether an economy was growing as rapidly as its neighbouring economies as shown in table 3.13. Such comparisons are to the advantage of the least developed country in the sample since an economy that is the furthest from its steady-state rate of growth can have higher growth rates than an advanced economy[57].

[57] Abramowitz. M. "The Catch-up factor in Postwar Economic Growth. Presidential Address to the Western Economic Association, 21st June, 1989", *Economic Inquiry* Vol.XXVIII, (1990) pp.1-18, p.10

Table 3.13: Average per capita GDP growth, South European countries and colonies.

	Period	Currency	Growth rate per annum (%)
Turkey	1923–1939	1990 Geary-Khamis Dollars	3.0
Italy	1921–1938	1990 Geary-Khamis Dollars	1.6
Spain	1921–1938	1980 Pesetas	-0.6
Greece	1921–1938	1914 Drachmas	1.6
Bulgaria	1921–1938	1911 Levas	1.7
Cyprus	1921–1938	1938 Pounds Sterling (Maltese Prices)	1.9
Malta	1921–1938	1938 Pounds Sterling (Maltese Prices)	1.3

Source: Bulgaria- Ivanov "Bulgarian National Income" (Unpublished) Table A.O; Turkey- Pamuk, "Intervention during the Great Depression - Another Look at Turkish Experience", Ch.12 in Pamuk and Williamson, *The Mediterranean…* (2000), p.321, Table 12.1; Greece - Kostelenos, *et al, Ακαθάριστο…* (2007), Table 8-Ib; Italy- Maddison, A., *Statistics on World…*(2009);.Spain- Prados De la Escosura "Spain's Gross Domestic Product…" (1993), Appendix D, Table D2; Malta/Cyprus- Table 3.12.

Cypriot growth rate was similar to the experience of other Southern European countries while Malta's economic growth was slower that most of Southern European countries[58]. The economic performance of Cyprus was as lacklustre as other Southern European countries, with Malta growing slightly slower by 1938. Perhaps surprisingly, both islands were part of the greater Southern European group of countries who saw their income disparity with the developed nations grow, despite the fact that they did not suffer serious negative consequences due to the First World War.

It would seem that their small size did not provide them with an advantage over their neighbours in terms of per capita GDP growth: the existence of a large copper ore body relative to the island's size on Cyprus and the presence of the Royal Navy in Malta did not result to Cyprus and Malta becoming non-typical growth overachievers. The colonies of Cyprus and Malta were doing as badly as Greece, Turkey and Bulgaria. Bulgaria, Turkey and Greece who were in a real mess: the First World War finished late for them as local conflicts continued after the end of fighting in the western front, with Greece and Turkey fighting a war until 1922. In addition these countries faced civil war, political and economic instability as their borders were re-assessed after the First World War. The negative repercussions of the First World War also led to their governments having to provide for the forced repatriation of refugees and tackle with hyperinflation. Cyprus and Malta faced none of these problems after the First World War: the war was very beneficial to their economies, while their status as British colonies meant that they were not affected by war damage. Yet despite this, Cyprus and Malta did as badly Bulgaria and Greece; looking at the annual rates of GDP growth, it is evident that the growth performance of the colonies (and of Malta in particular) lagged behind in the post-depression recovery, while Cyprus had a much larger fall of GDP during the recession than the independent states that were battling with so many additional problems.

[58] The growth rate of Turkey is somewhat misleading. The start year coincided with the end of a series of devastating conflicts for Turkey that began in 1912 while the end year is the peak year. Thus the growth rate captures a trough with a peak, thereby overstating the growth rate.

Sector breakdown of GDP

The lacklustre economic performance of Cyprus did not preclude significant changes in the economic structure of Cyprus. Establishing the industrial shift is important as economic growth becomes sustainable when it is complemented by a change in the economic structure away from the primary and towards the more productive secondary and tertiary sectors[59]. If such a shift does not take place then the basis for sustainable increases in output is eroded[60]. Thus the GDP estimates in Malta and Cyprus are broken down into sectors in order to capture any structural shift and to pinpoint why the islands did not perform better that the countries surrounding them.

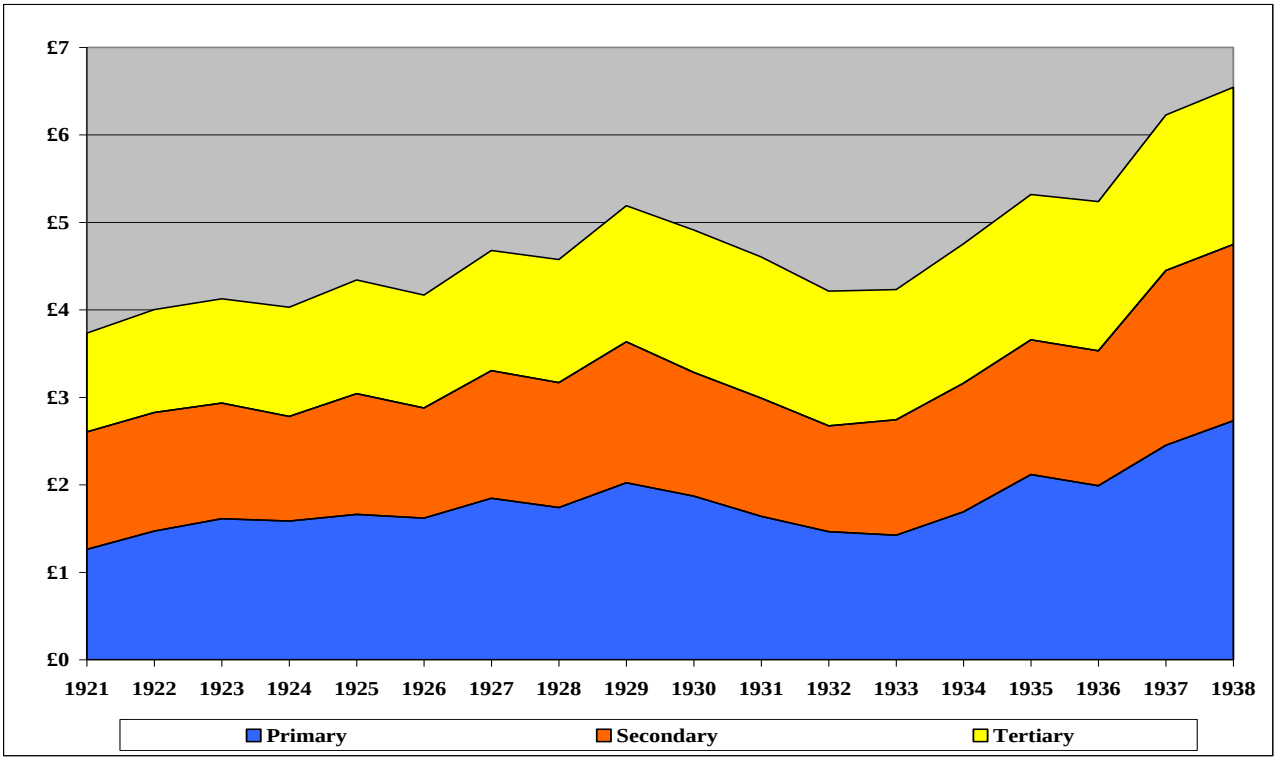
The GDP of Cyprus is broken down into the primary, secondary and tertiary sectors, and is presented in absolute terms (figure Figure3.7) and as a percentage of the total value added (figure 3.8). Due to the short time span, structural changes were expected to be minimal. However, it is clear that in Cyprus the primary sector, driven by the expanding mining industry, increased its relative size at the expense of the other sectors. This is particularly evident from 1934 onwards; thus the recovery after the depression was almost exclusively based on the rapid rise in mining output. The economic structure of Cyprus was more advanced than other Southern European countries. The proportion of agriculture to GDP in 1938 was 24.5% in Cyprus, as compared to 62.2% for Bulgaria, and 39% for Greece and Turkey[61]. Agriculture is still important in the Cypriot economy, but not as overwhelmingly important as in Bulgaria.

[59] Kuznets, *Modern Economic Growth* (1966), p.25, p.87

[60] Schulze, M., "Origins of Catch-up failure: Comparative Productivity Growth in the Hapsburg Empire 1870–1910", *European Review of Economic History*, (2007) vol.II, pp.189-210, pp.195-196

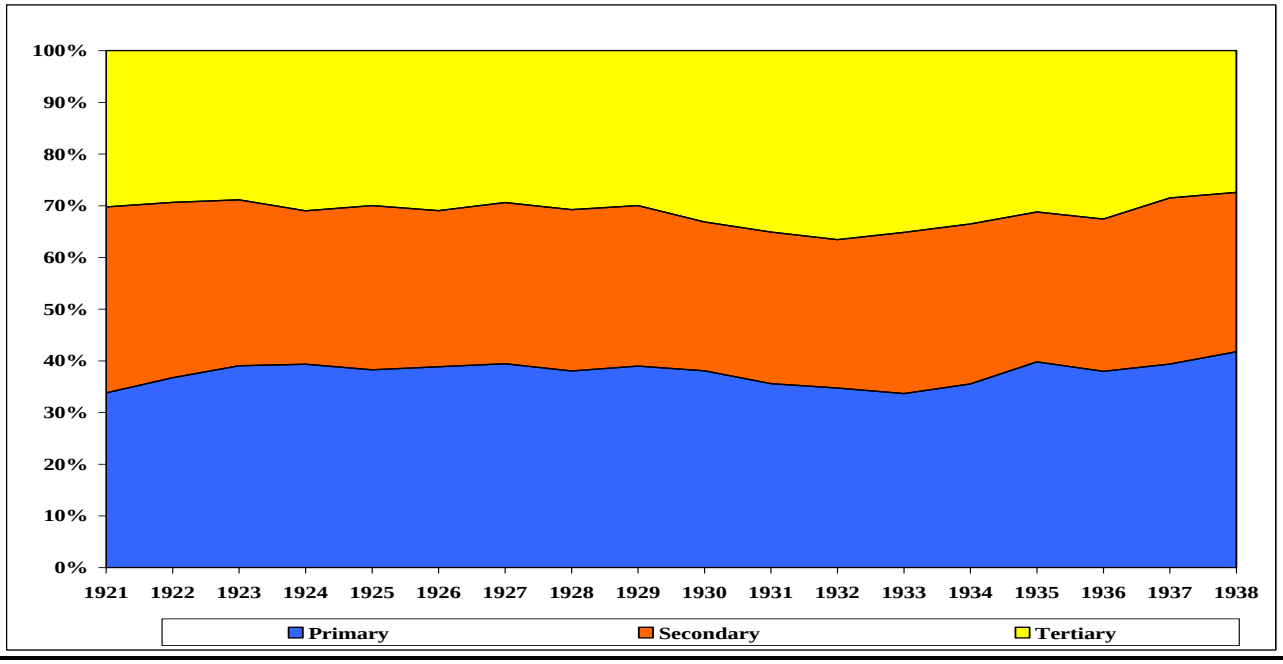
[61] Ivanov, M. & Tooze A., "Convergence or Decline on Europe's South-eastern Periphery? Agriculture, Population, and GNP in Bulgaria, 1892–1945", *Journal of Economic History*, Vol. 67, No.3, (2007) pp.672–704, p.685; Pamuk, "Intervention during the Great Depression", (2000), p.321, Table 12.1

Figure 3.7: GDP by sector in Cyprus, in 1938 Cyprus pounds (millions), 1921-1938.



Source: Appendix B.

Figure 3.8: GDP by sector in Cyprus, as a percentage to GDP (%), 1921-1938

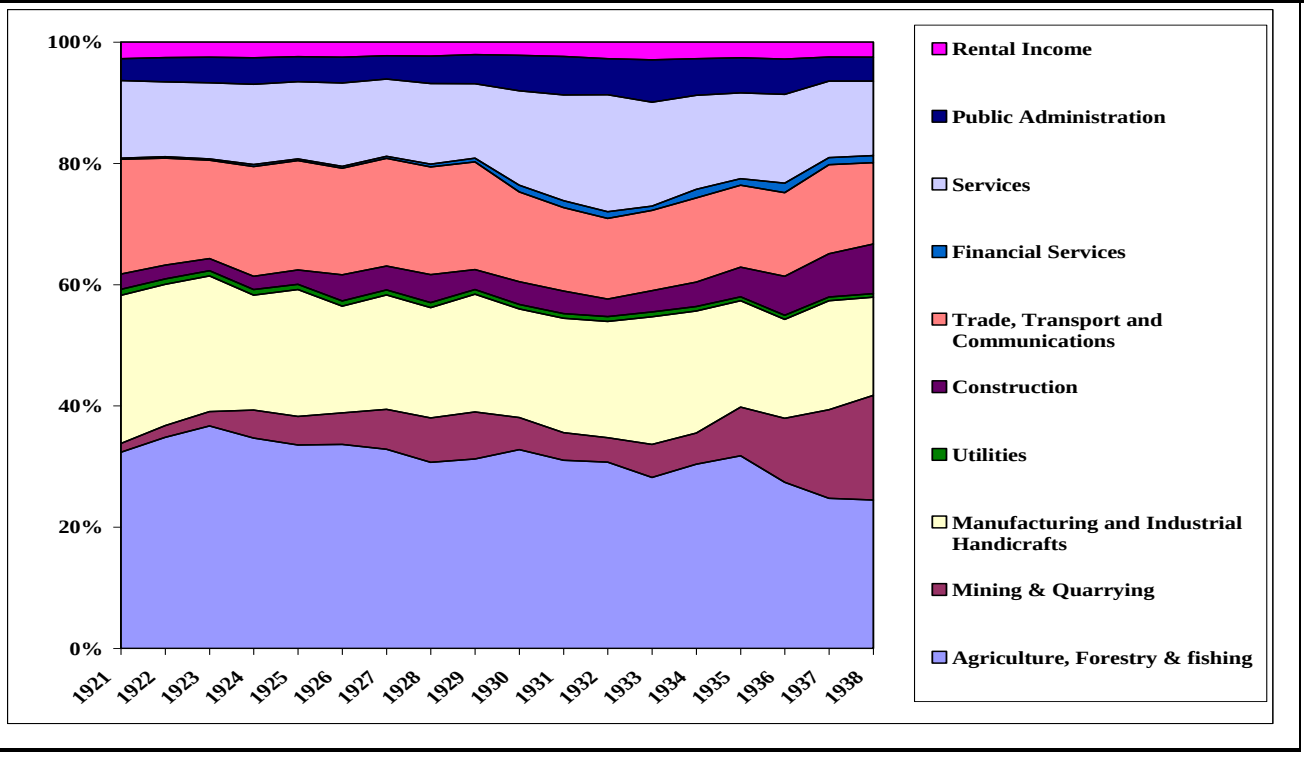


Source: Appendix B.

The broad generalisation in sectors does not allow an adequate understanding of the structural changes that took place within sectors, especially as the mining sector is to be included, under Eurostat classification, in the primary sector. Hence GDP is broken down by industry in figure 3.9 to better understand the changes in economic structure. It is clear that the growth during the 1920s took place across the board: there was no single industry that surged ahead of the others. This

partially explains the volatility of Cypriot output in the 1920s as output was still dependent of farming and food processing, which was dependent on the weather. Thus the rapid rise of mining was clearly a phenomenon of the latter half of the 1930s. In 1921 the mining industry produced 1.5% of Cypriot GDP, but rose to 17.3% by 1938. The development of new copper sulphate mines altered the economic structure of the island and enabled Cyprus to be part of the European post-depression recovery, as explained in chapter 5[62].

Figure 3.9: GDP by industry in Cyprus, as a percentage to GDP (%), 1921-1938



Source: Appendix B.

However as figure 3.9 and appendix B indicate, the relative increase of mining was also due to the stagnancy of the agricultural industry as agriculture did not rapidly recover from the effects of the depression and the drought. The industry was locked in a prolonged crisis, explained in chapter 4. The construction sector also experienced rapid growth, increasing its share of GDP from 2.5% in 1921 to 8.2% in 1938, explained in detail in chapter 6.

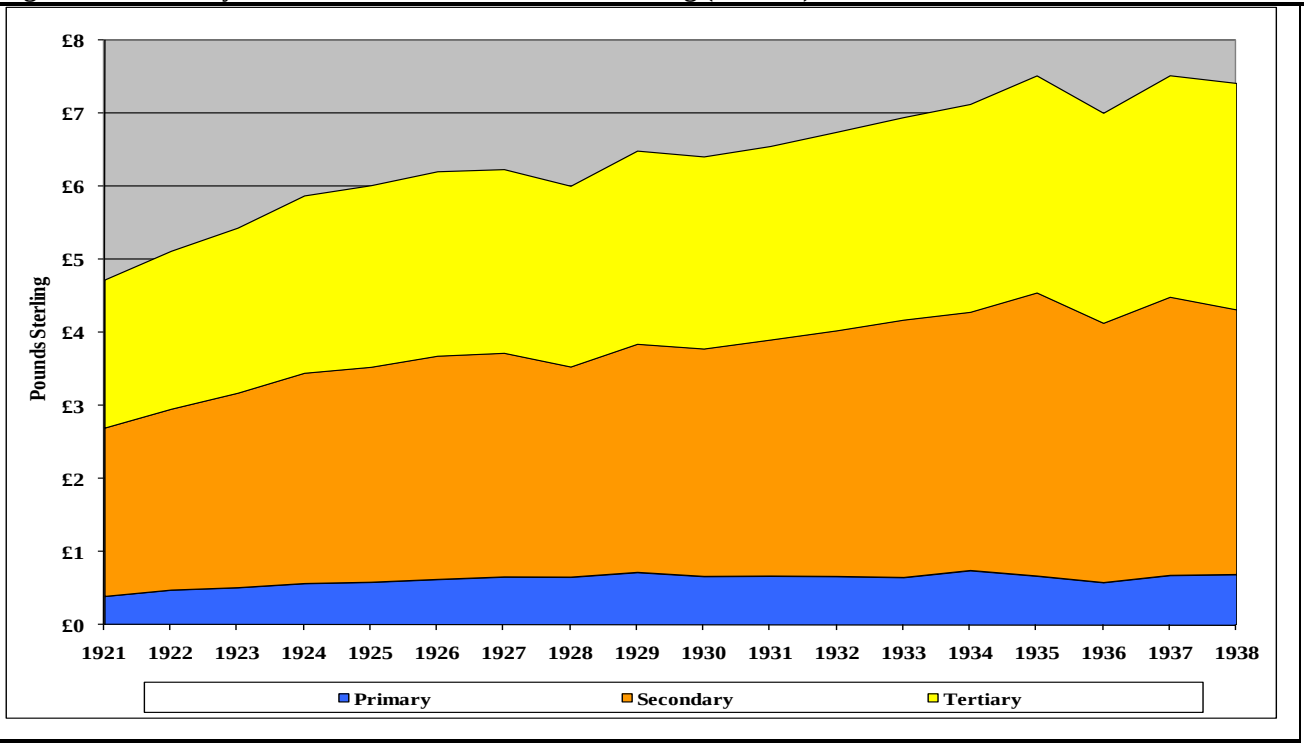
Of interest is the reaction of the government to the great depression. Figure 3.9 indicates that the share of government was rising over the whole period with a sharp increase during the great depression as government expenditure declined less than output: this is analysed in detail in chapter 8.

[62] See: Chapter 3, p.69, footnote 36

Malta's economic structure is different to any other country of the southern periphery. Malta's had a "peculiar form of underdevelopment", which arose from the lack of sufficient agricultural land, and the dependence on servicing the British armed forces as a source of employment[63]. The resulting effect was a manufacturing industry dominated by the Royal Navy Dockyard, coupled with a service economy that catered to the needs of servicemen. Its economy was not just growing slowly but it was also not diversifying away from its dependence on the British military presence.

The sector breakdown of Malta's GDP is shown in absolute (figure 3.10) and relative (figure 3.11) terms. The economic structure of Malta was strikingly different from that of Cyprus with just 7.5% of output in 1938 being produced by agriculture. Despite being considered an underdeveloped state, with similar per capita GDP levels to Cyprus, Malta's primary sector was not an important sector of the economy, since at no point did it produce more than 11% of GDP. This is due to its dependence on external income flows and its geography, and it is clear that the majority of population of Malta would be unsupported if agriculture was the main occupation[64]. Malta's underdevelopment was an underemployment of the urban population, and not due to the lack of structural shift towards the secondary and tertiary sectors.

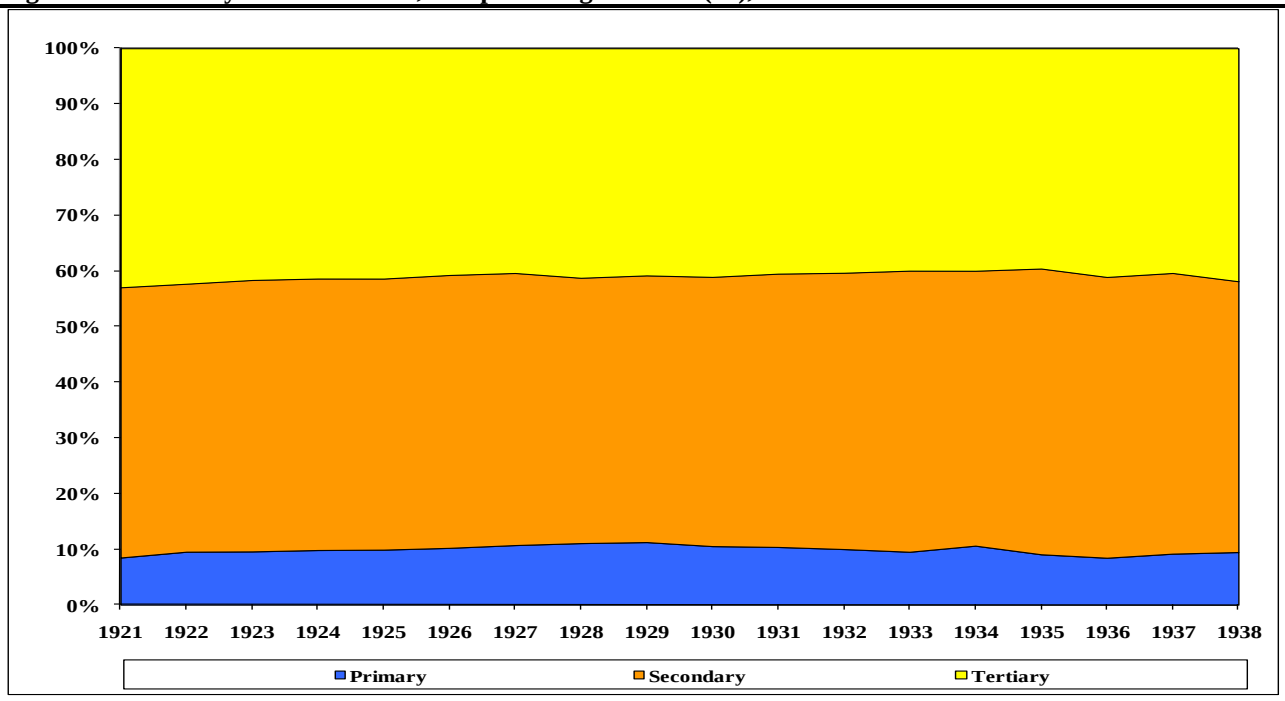
Figure 3.10: GDP by sector in Malta, in 1938 Pounds Sterling (millions), 1921-1938



Source: Appendix C.

[63] Fenech, *Responsibility and Power…* (2005) p.249
[64] Charlton, "Trends in the Economic…" (1960), pp.29-30

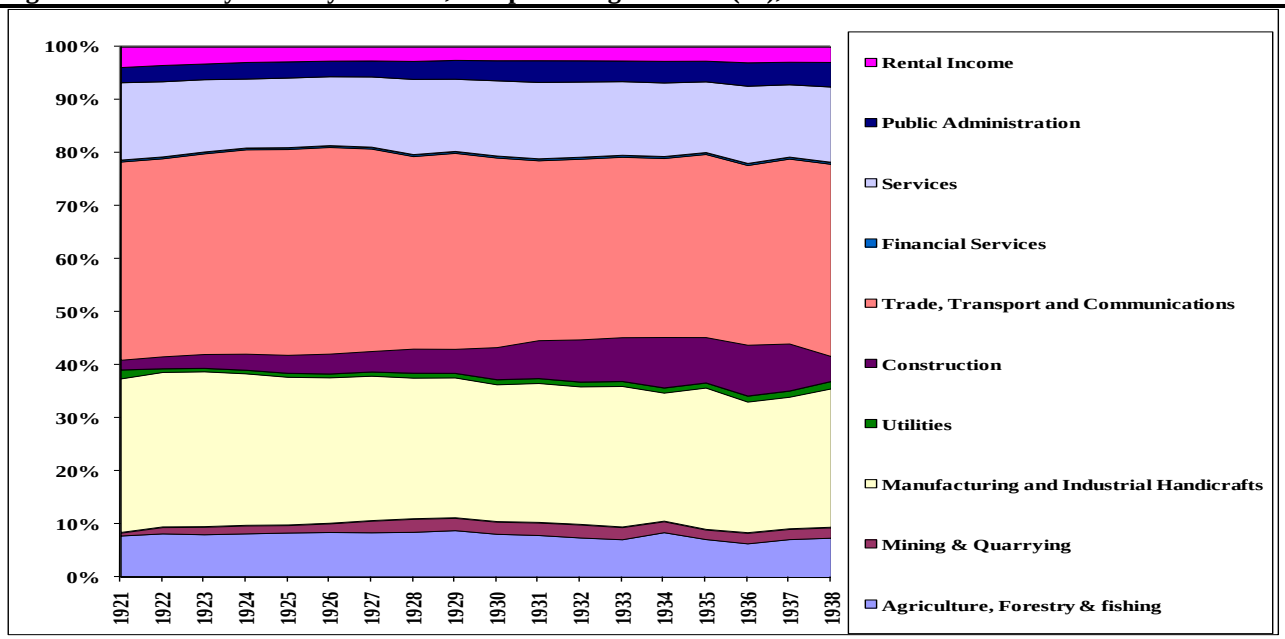
Figure 3.11: GDP by sector in Malta, as a percentage to GDP (%), 1921-1938



Source: Appendix C.

Figure 3.12 and appendix C indicate that the small primary sector was affected less than other sectors during the 1936 recession, which was caused by the withdrawal of the British fleet. In addition, although structural change is less dramatic than in Cyprus, there was some change in Malta, as manufacturing declined and construction increased as a share of GDP during the 1930s. The increase in construction was substantial enough to be commented on by historians and contemporaries. Part of it was due to a surge in public works spending by the Maltese self-government, but the largest increase was in private housing construction, as analysed in chapter 6. The role of government shows a distinctive rising trend in Malta, as discussed in chapter 8.

Figure 3.12: GDP by industry in Malta, as a percentage to GDP (%), 1921-1938



Source: Appendix C.

It would seem from the aggregate estimates that Cyprus was engaging with the global economy that left it open to the vicissitudes of the interwar period. Malta was dependent on military expenditure, but as expenditure remained constant and population growth accelerated, Malta headed towards economic stagnation. The explanations behind such disparate growth paths are set out in the following chapters, which provide a sector by sector analysis of the two economies, in order to understand the causes behind the islands' poor growth performance.

Labour productivity, growth contribution and shift share analysis

The desegregation of output into sectors allows for sector estimates of labour productivity. Multifactor productivity was not estimated due to the lack of capital stock estimates[65]. The labour productivity that could be estimated here is value added per worker. The absolute number of labour used is shown in table 3.14. The information was collected by occupation statistics for the censuses of 1921 and 1931; the occupation statistics for 1938 are the log-linearly interpolated results of the Cypriot census of 1946 and of the Maltese census of 1948. Some corrections were necessary, thus altering the occupation results presented in the censuses. The occupations were re-classified in order to fit the correct definition of what constituted primary, secondary and tertiary sector. In addition those who were classified as labourers with other occupation were assigned to the manufacturing and construction sector, since in the 1921 census labourers were defined as belonging to that sector. As a result there can be no distinction between construction and manufacturing and the labour productivity is given for the combined secondary sector.

Some additional alterations of the census result were needed to correct known underreporting in the occupation data. The women employed in agriculture were revised upwards, as explained in chapter 4. An upward revision also took place in the employment in mining and quarrying in Cyprus in 1921 since mining statistics were deficient prior to the establishment of the department of mining in 1926. The output per worker based on occupation statistics in the 1921 census were clearly too low as the miners could not complete the number shifts reported by the public works department in 1921[66].

Table 3.14: Labour force, Malta and Cyprus, 1921-1938.

Malta	Total Labour Force	Agriculture	Mining and Quarrying	Manufacturing and Construction	Service
1921	89841	27931	944	25101	35865
1931	93304	25678	2246	25281	40099
1938	95036	24143	1457	24468	44968
Cyprus	Total Labour Force	Agriculture	Mining and Quarrying	Manufacturing and Construction	Service
1921	160708	107024	1377	31560	20747
1931	178663	110644	3431	35532	29056
1938	199835	109748	16861	34773	38453

Sources: Percival, *Census...1946* (1947); Hart-Davis, *Cyprus…1931* (1932); Hart-Davis, *Cyprus...1921* (1922); Malta, *Eleventh Census...1948* (1949); Malta, *Census*...1931 (1932) Malta, *Census...1921* (1922)

[65] Note however that single productivity in agriculture can be misleading: Federico, *Feeding the World…*(2005) p.68

[66] They were 74,469 shifts recorded in 1921 for the mining sector, which could not be covered by the persons occupied in the 1921 census. Christodoulou, *Inside the Cyprus Miracle…*(1992) p.75.Thus out of 2006 labourers of 1921, 1000 were assigned to the mining sector in order to be able to work the shifts mentioned by the Public works department in 1921.

Labour productivity was estimated by dividing the sector output by the number of employed persons in that sector[67]. However, due to problems in the numbers of persons employed, the labour productivity estimates shown in table 3.15 are less robust than the GPD results and need to be treated cautiously.

Table 3.15: GDP per employee (Labour Productivity), Cyprus and Malta, 1921-1938

	Cyprus				Malta		
	1921	1931	1938		1921	1931	1938
Agriculture, Forestry and Fishing	20.1	23.0	26.0	Agriculture, Forestry and Fishing	13.3	20.4	23.0
Mining & Quarrying	70.2	109.0	119.5	Mining & Quarrying	26.7	68.1	98.0
Manufacturing, Handicraft, Construction and Utilities	58.9	61.3	83.6	Manufacturing, Handicraft Construction and Utilities	61.4	89.2	98.0
Services	113.8	109.2	93.5	Services	72.7	86.3	91.5
Total Output Per Worker	41.4	44.8	58.3	Total Output Per Worker	50.6	68.5	75.8

Note: The implied rental income from housing was removed from the GDP before calculating productivity. In constant 1938, PPP, pounds sterling.
Source: Appendix B (PPP adjusted), Appendix C; Table 3.14.

Bearing in mind the limitations, labour productivity growth in Cyprus and Malta was quite significant during the interwar period: GDP per employee grew by 2.4% per annum in Malta and by 2.1% in Cyprus during the period 1921-1938. However, as the estimate does not account for any increase in the hours worked this productivity growth, part of the growth of GDP per worker may be due to an increase in the average hours worked.

The slower growth of Cypriot productivity was due to the problems facing Cypriot agriculture, which prevented it from becoming as productive as it could have been, as analysed in chapter 4. The lack of progress in Cypriot agriculture can be seen by the fact that by 1938 Maltese farmers were more productive than Cypriots, despite the inherent advantages of farming in Cyprus. The dynamic growth of mining in Cyprus was not just a phenomenon in terms of output: mining was also becoming very productive, overtaking the service sector as the most productive industry. The secondary sector's productivity grew substantially during the interwar period, yet it is not possible to see if such advances took place in the manufacturing or the construction industry, as explained in chapter 6. The decline in the service sector productivity in Cyprus is in part due to the estimation method of service output, since a great deal of service value added was estimated using constant productivity assumptions; however it is possible that the rural unemployed and underemployed who

[67]A better way of estimating productivity would be taking into account the number of hours worked. However, this is not possible since there were a lot of people employed in other sectors who were also part time farmers. Since the number of hours worked in each sector is unknown, productivity estimates per labour provide us with better estimates. Source: Antoniades, A., Mavrogenis, A.P, & Papayiannis, C., *Part-time Farming in Cyprus*, (Nicosia: Agricultural Research Institute, 2001), "Introduction".

were facing the agricultural crisis entered in low productivity service in order to make a living, thus reducing the productivity of the sector[68].

Table 3.16 multiplies the growth rate of each sector by its initial share of GDP in order to quantify the relative contribution to economic growth. It confirms that the mining sector was pivotal in Cypriot growth, both in the 1920s and in the 1930s. However, it also indicates how in the 1920s the tertiary and secondary sectors, as well as the agricultural industry, were more important: despite growing more slowly than mining, their large share to GDP meant that their contribution was more significant. This changed in the 1930s as mining grew even faster and agriculture stagnated, dragging Cypriot growth down; if Cypriot agriculture did marginally better in the 1930s the overall growth rate of Cyprus would be much more rapid and closer to the rapid achievement of Turkey. On the other hand Maltese growth was centred on the service sector, and the manufacturing sector, but it was the slowdown of the service sector that led to the slowdown of GDP in the 1930s.

Table 3.16: Relative contributions to growth (%), Cyprus and Malta, Peak-to-Peak

Malta					
	GDP growth per annum	Agriculture	Mining	Manufacturing, Handicrafts, Utilities and Construction	Service
1925-1937	1.88	0.05	0.06	0.84	0.91
1925-1929	1.91	0.27	0.22	0.56	0.82
1929-1937	1.86	-0.07	-0.01	0.97	1.34
Cyprus					
	GDP growth per annum	Agriculture	Mining	Manufacturing, Handicrafts Utilities and Construction	Service
1925-1937	3.0	0.16	0.62	0.87	0.91
1925-1929	4.6	0.91	0.87	0.92	1.69
1929-1937	2.3	-0.20	0.83	0.81	0.52

Note: Measurement for all sectors from peak to peak in GDP
Source: Appendix B (PPP adjusted), Appendix C.

The output per worker allows us to make some first estimates of the impact of structural change on productivity growth using shift share analysis. The results are indicative rather than definitive due to the problems of labour productivity described above, but serve to highlight what underpinned growth in Cyprus and Malta. The methodology used is the same as in Schulze and in Fagerberg, where growth in aggregate output per worker is decomposed into three elements, with the 'residual' being given an explicitly economic interpretation[69]. The increase in total productivity is broken

[68]Clerides, I., *Ελευθερία*, 30 July 1927

[69] Schulze, M., "Origins of Catch-up failure" (2007) pp.199-201; Fagerberg J., "Technological progress, structural change and productivity growth: a comparative study", *Structural Change and Economic Dynamics* (2000) vol.11 pp.393-411, pp.400-403

down in sectors and into the sector shares of labour to total employment in order to isolate three effects:

- The *static shift effect* indicates the increase of productivity that is due to the allocation of labour. Thus the effect is significant and positive when the employment share of sector with high productivity increases at the expense of those of low productivity.
- The *intra-sector effect* indicates the contribution to productivity growth from within individual sectors as weighted by their respective employment shares
- The *dynamic shift effect* measured the impact of the interaction between changes in productivity within industries and changes in the allocation of labour between industries. It will be high if the sector with the largest productivity growth also has the largest relative labour inflow.

A formal explanation is provided below. Define

Q= aggregate value added
P= value added per employee
L= total labour input

$$P = \frac{Q}{L} = \frac{\sum Q_i}{\sum L_i} = \sum\left[\left(\frac{Q_i}{L_i}\right)\left(\frac{L_i}{\sum L_i}\right)\right] \quad (5)$$

With i = sector (i = A, G, ..., H) shown in (3).

Define

$$P_i = value\ added\ per\ employee\ in\ sector\ i \quad (6)$$
$$S_i = value\ added\ per\ employee\ in\ sector\ i \quad (7)$$

Thus substituting (5) and (6) into (4)

$$P = \sum(S_i P_i) \quad (8)$$

Further
$\Delta P = P_t - P_0$ and $\Delta s = S_t - S_0$

Where t= final year and 0=start year

From (7) follows:
$$\Delta P = \sum(P_{i0}\,\Delta S_i + \Delta P_i \Delta S_i + S_{i0}\Delta P_i) \quad (9)$$

As growth rate:
$$\frac{\Delta P}{P_0} = \sum\left(\frac{P_{i0}\Delta S_i}{P_0}\right) + \sum\left(\frac{\Delta P_i \Delta S_i}{P_0}\right) + \sum\left(\frac{S_{i0}\Delta P_i}{P_0}\right) \quad (10)$$

The results of the shift share analysis are presented in table 3.17

Table 3.17: Shift share decomposition of labour productivity (% per annum), 1921-1938.

	Percentage change of output per worker	Static Shift	Intra-sector	Dynamic Shift
Cyprus				
1921-1938	2.06%	1.10%	0.81%	0.15%
Malta				
1921-1938	2.41%	0.32%	2.05%	0.04%

Note: The implied rental income from housing was removed from the GDP before calculating productivity.
Source: Table 3.14, Table 3.15.

The static shift of Cyprus is based on the mining and service industries since they are the only industries with an increasing share of the labour force. People were moving out of low productivity agriculture and into services that had a higher productivity. However, the productivity of the service sector declined as the additional labour did not induce productivity improvements, which explains the very limited impact of the dynamic shift effect. Only the mining sector had a positive dynamic effect, but its impact is limited due to the fact that other increasingly productive industries, such as manufacturing, were shedding labour in Cyprus. The intra-sector productivity effect is important, as the secondary sector and to a lesser extent agriculture, maintained their output despite the relative decline of labour they employed.

This intra-sector effect is particularly important in Malta, with 85% of the increase in productivity coming from sectors maintaining output despite shedding labour. This was particularly true in the secondary and tertiary sector. The only industry with some static and dynamic effect was the service industry, but such effects were much less powerful that the intra-sector effect. The low value of static and dynamic shift imply that labour was not moving to the faster growing sectors and that structural change in terms of output and labour shift was limited.

The results of labour productivity and of the shift share analysis are contrary to expectations: they imply that the lacklustre growth of the islands was due to the failure in providing enough employment for the growing populations of the islands and not due to the lack of productivity growth. This was especially true for Malta: the inability of Malta to providing enough employment is seen by the divergence of the per capita GDP and per worker GDP. This implies that the lacklustre growth was due to the fact lack of employment opportunities, since those in employment managed to substantially increase their productivity. Greaves was correct to see the problem in interwar Malta of one of lack of additional opportunities for employment[70]. Thus the population was growing faster than the opportunity to employ them remuneratively employment.

[70] Greaves. *Report on Economic Conditions…*(1935) p.38

The substantial growth in labour productivity might indicate a story of "haves" and "have-nots". The population was rising rapidly in both Malta and Cyprus, while labour productivity was rising at a faster rate than per capita GDP. Thus employment grew slower than population; as a result more and more people must have become unemployed or underemployed. This suggests that the limited spoils of the islands' lacklustre growth were not shared equally. This was not indicated in the bibliography: this excess in human labour might have created an underclass of the population, providing the tinder for the political upheavals that struck Cyprus and Malta in the 1930s. If Surridge's estimates were correct, and 25% of the rural population in Cyprus was below his minimum poverty lines, it is likely that these persons are the same ones who were not fully participating in the nation's economy[71] The unequal distribution of the gains of growth seems to have also occurred in Turkey and Egypt, and it explains the limited urbanization during the period, since "real wages increased for those who had a job, but unemployed migrants could not hope to benefit from urban life... thus the rural people remained in their villages and tried to make both ends meet"[72].

Conclusion

The per capita GDP growth performance of Cyprus and Malta was not spectacular, with the predominantly agricultural economy being the prime cause of violent expansions and contractions of Cypriot GDP. Such contractions had calamitous outcomes: the combination of drought and the great depression led to a large and sustained drop in output in constant and current prices, leading to the eruption of violence in Cyprus. Recovery did not come from the agricultural sector but from the rapidly emerging mining and construction industries, whose dynamism would also underpin the rapid economic growth after the Second World War. The failure of the farming sector to provide for the growing rural population was the reason that Cyprus did not grow faster than its South European neighbours; the potential was there if the agricultural crisis could have been abated, as discussed in chapter 4.

Maltese economic growth was much more stable, but slower than other South European economies: the dependence on British military expenditure in Malta led to relatively stable but slow economic growth, as military expenditure in Malta gradually declined[73]. This dependence led to Malta experiencing trade cycles which were at odds with global economic conditions. It was perhaps the only country in Europe not to experience a reversal of GDP during the great depression, but to

[71] Greaves. *Report on Economic Conditions…*(1935) p.32
[72] Rothermund. D., *The Global Impact of the Great Depression 1929-1933* (New York: Routledge, 1996) p.81
[73] Eloranta, "Military Spending in History", (2009), Table 3.

experience a recession in 1936 as the Royal Navy abandoned the island due to fears of an Italian attack[74]. The slow GDP growth was threatened by the increase in the population due to the lack of migration opportunities, and the economy found it difficult to employ the increased population. The political disturbances that led to the suspension of the constitution in Malta did not take place in a background of serious economic distress but of continuing economic stagnation. The economic structure of the island encapsulated the British armed forces dominance: the Royal Navy Dockyard overshadowed the island's manufacturing industry, while the service industry catered the needs of British servicemen. Primary production was not so important in Maltese development and the seeds of future post-1945 growth were not yet sown in interwar Malta.

Comparing Cyprus and Malta in terms of per capita, PPP, GDP, indicates that incomes were quite similar in 1921, but that Cyprus pulled ahead by 1938. The post-1945 income gap between the two states is a legacy of the interwar period: as Cypriot mining drove the economy forward, the Maltese dependence on military expenditure caused it to lag behind, only for their differing fates during the Second World War to increase their income divergence.

The estimates of labour productivity indicate that there was an increase in productivity; it was not possible to distinguish if this increase in productivity was due to longer work hours or better technology. The productivity increases were across the board but was slower in the agricultural sector. The secondary sector exhibited a great increase in productivity but its share of the labour force was reduced; with the exception of Cypriot mining, labour was not going to the sectors with the largest productivity growth. Most worryingly for the societies of Malta and Cyprus, the results of labour productivity seem to indicate a story of insiders in employment reaping the benefits of growth and an increasing number of unemployed outsiders that drifted in and out of employment and poverty.

[74] Castillo. *The Maltese Cross* (2006) p.145

Chapter 4: Agriculture

"Anyone who writes about farming is likely to be writing critically of the way the farming is carried out … government reports are aimed at seeking weaknesses and correcting them; the speeches and writings of political leaders … are aimed at stressing the effect of bad weather or wrong policy; and even the farmers themselves are usually writing with the idea of securing easier credit or better prices and therefore paint the gloomiest possible picture. With such a background one is apt to overlook the big achievements of the Cyprus farmer, who in the face of great climatic and political handicaps has for many centuries supported a considerable population and has established a remarkable range of products"[1].

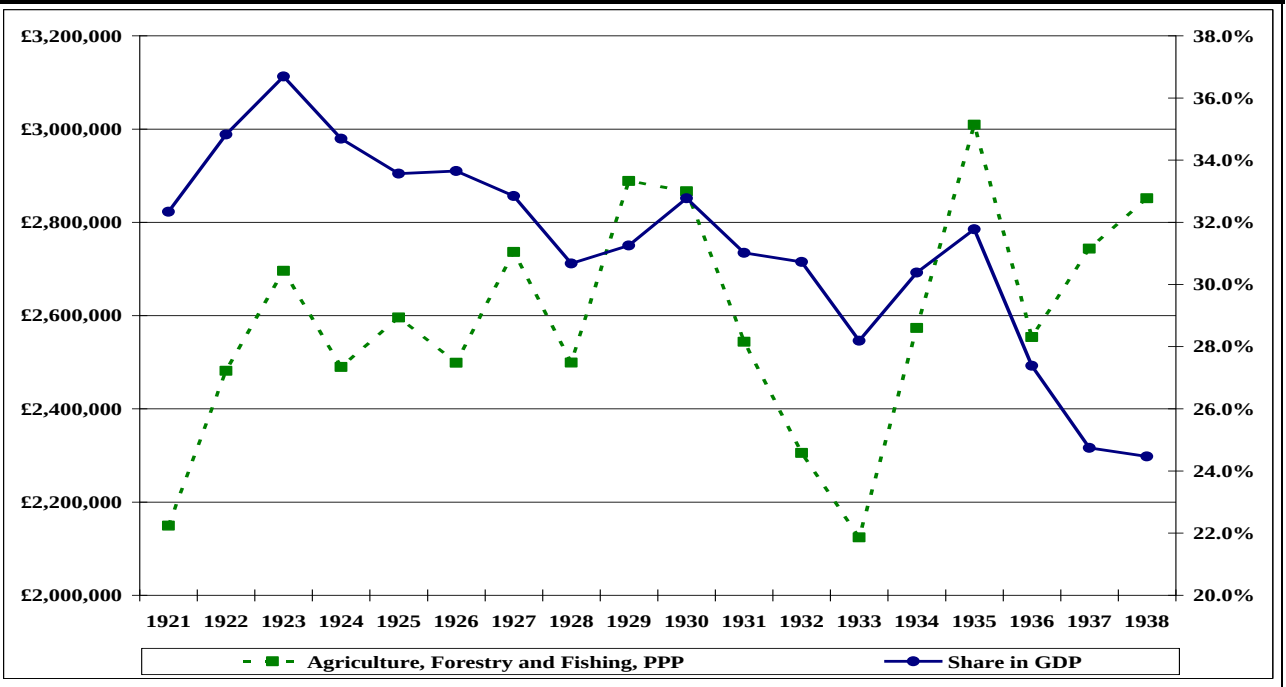
This chapter sheds light on the agricultural sector of the islands, which lagged behind the rest of the economy, creating a drag on the development of the islands. It is the first time that a detailed analysis of agricultural value added has been constructed for the interwar period, and the robustness of the underlying data ensures that this is by far the most reliable from all the sector estimates presented in the thesis. The agricultural output failed to keep up with the rest of the economy and with Southern European agriculture. The sector was not that important to Malta, but it was the main employer in Cyprus. As a result of the sector's poor growth Cyprus missed the opportunity to experience faster economic growth in the interwar period and become the non-typical success story of Southern Europe. The problems plaguing the island's agricultural sector were not dissimilar to those in other peripheral European states but were combined in a particularly serious way: the reluctance of the colonial government in introducing radical measures meant that the sector remained in crisis until the Second World War.

Agricultural output

The value added of agriculture in Cyprus is shown in figure 4.1. Agriculture was important to the Cyprus economy, but its relative importance was falling over time since it failed to keep up with the islands lacklustre growth. The share of agriculture in GDP fell from 32.2% in 1921 to 24.5% in 1938, even though the value added in absolute terms increased. The agricultural sector and the rest of the economy were in two different growth patterns particularly after 1935: the recovery of the agricultural sector was sluggish while the rest of the economy was experiencing rapid growth. As the majority of the population were dependent on agricultural output for their income, the stagnation of the industry meant that the income growth of the rural population was slower than per capita GDP growth.

[1]Percival, *Census... 1946* (1947) p.59

Figure 4.1: Value added of agriculture, Cyprus, 1921-1938



Note: In 1938, PPP, pounds sterling and as share of GDP. Source: Appendix B (PPP adjusted).

The relative decline of agriculture would not have hindered Cypriot economic development if another sector provided sufficient and more productive employment. In the majority of cases, the transformation of a developing country to a developed country necessitates the transfer of underemployed agricultural labour to higher productivity employment in the manufacturing and service sectors[2]. Yet the previous chapter indicated that this was not the case: some were employed by the mining sector but most remained in the countryside leaving the Cypriot economy stuck in mid-transition.

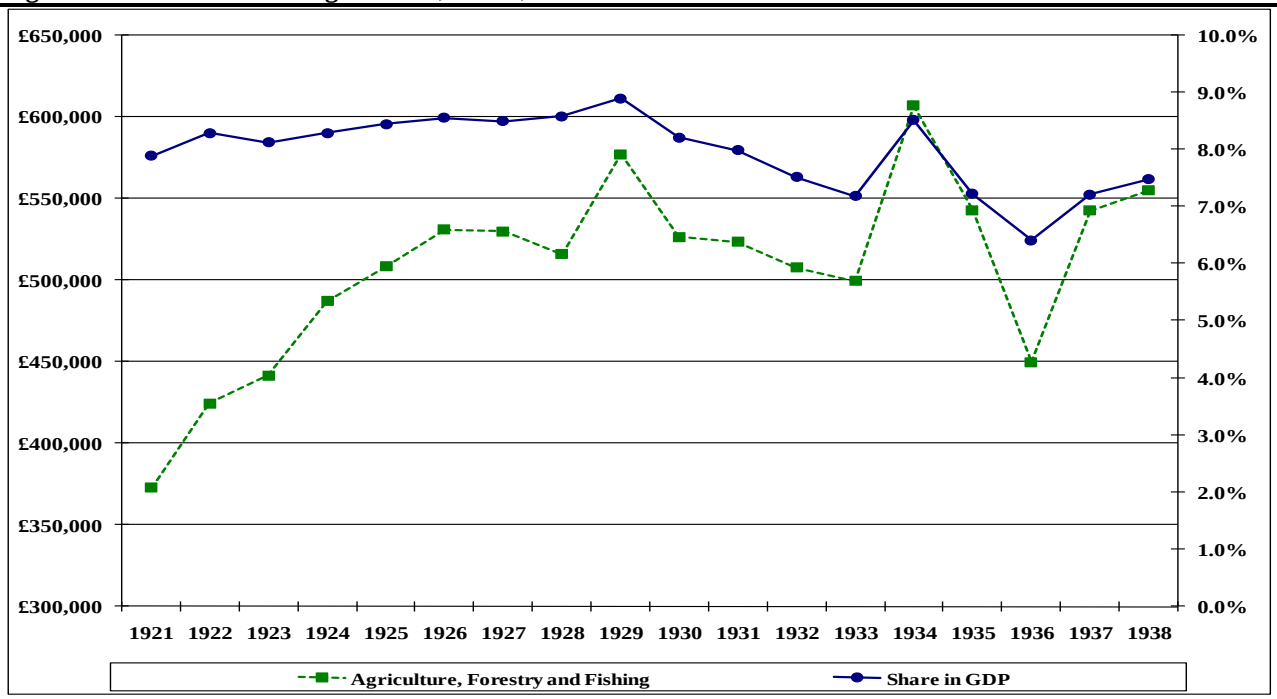
The value added of agriculture in Malta is shown in figure 4.2; it was not especially important to the economy since the island was transformed into a service-led economy by the middle of the 19th century[3]. The share of agriculture in GDP remained relatively stable, despite the fact that total agricultural output increased in absolute terms.

Weather was an important influence on farming output. The extreme output variation in Cypriot agriculture was due to the island's erratic rainfall. This was highly problematic for Cypriot farmers, since the uncertainty in the possible future output prevented agricultural investment and accentuated

[2] Federico, *Feeding the World* (2005),p.1.
[3] Busuttil, S., "Agriculture in Malta: A Historical Note" *Options Méditerranéennes* (1993) Ser.B, no.7, pp.10-26, p.10

problems of rural indebtedness[4]. Malta's weather was less variable but poor rainfall in 1936 did lead to a reduction in agricultural output[5].

Figure 4.2: Value added of agriculture, Malta, 1921-1938



Note: In 1938, PPP, pounds sterling and as share of GDP. Source: Appendix C.

The per capita value added of the sector, shown in figure 4.3, confirms the stagnant state of agriculture in both islands as it barely kept up with the accelerated increase in their population. This situation was particularly apparent in Cyprus, were the per capita value added of agriculture growth was just 0.3% per annum for the period 1921-1938.

[4] See: Chapter 4, pp. 99-116, Section "Constraints and missed opportunities"
[5] Malta, *Statistical (Blue) Book 1937* (Valletta, GPO, 1938), Section 22 "Summary of Industrial Development"

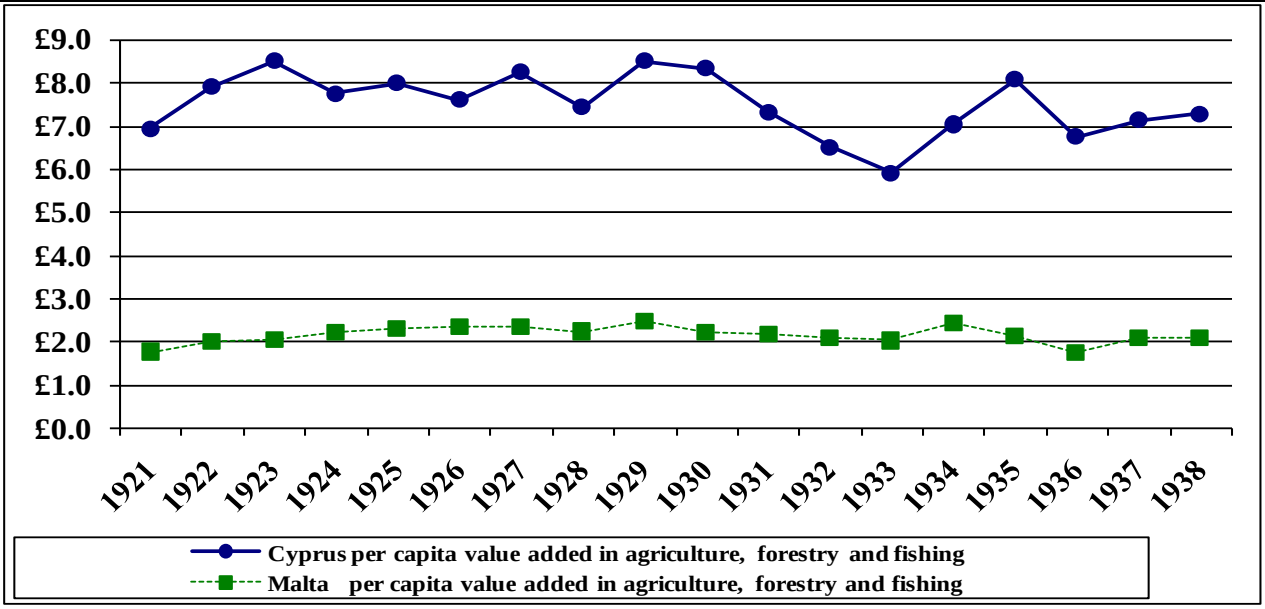
Table 4.1: Value added of agriculture, Cyprus and Malta, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	372,866	2,149,381	1930	526,603	2,866,276
1922	424,437	2,481,483	1931	523,480	2,543,614
1923	441,760	2,695,722	1932	507,588	2,305,174
1924	487,282	2,489,443	1933	499,427	2,124,251
1925	508,524	2,595,692	1934	607,110	2,573,071
1926	531,002	2,498,420	1935	543,143	3,009,268
1927	530,010	2,736,282	1936	449,767	2,553,666
1928	515,842	2,498,803	1937	542,685	2,743,500
1929	577,392	2,888,322	1938	554,996	2,851,240

Note: In constant, PPP, pound sterling of 1938. Source: Appendix B (PPP adjusted); Appendix C.

The recovery from the slump of 1921 proved unsustainable in Cyprus. The great depression led to a sustained fall in agricultural output due to it coinciding with a severe drought; production slipped to levels even lower than the recession of 1921. Recovery in the farming sector was slow: the peak per capita output of 1929 was not reached until after the start of the Second World War.

Figure 4.3: Per capita value added of agriculture, Malta and Cyprus, 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Table 4.1, Table 3.2.

The agricultural estimates for Cyprus seem to agree with contemporary perceptions. The British department of overseas trade estimated Cyprus' agricultural output at £1.4 million Cypriot pounds during normal conditions, falling to £1 million during drought conditions[6]. This is close to the current estimates of £1.4 million during the 1920s, falling to £1.2 million during the serious drought of 1933[7]. The report of the director of agriculture for the year 1938 estimated the output of Cyprus

[6] Greaves, *Report on the Economic Conditions…* (1935) p.3. Deflating Greaves' estimates by the CPI to 1938 constant prices: £1,011,535 under drought and £1,416,150 under normal conditions. Source: Appendix B
[7] Source: Appendix B

as £1.3 million Cypriot pounds, with the current estimate being £1.6 million[8]. The same report estimated the local production of meat was £700,000 Cypriot pounds, which is close to the current estimate of £700,125 Cyprus pounds for 1938[9].

The results do quantitatively indicate the great agricultural crisis of Cyprus, which was the primary concern of contemporary observers[10]. The majority of households were rural, and a part of their income was supported by farming activities. Yet in per capita terms the growth of agriculture was minimal at 0.3% for the period 1921-1938. This was a calamity that was made worse by the drought and the great depression; growing households found their income squeezed despite being near or below the poverty line. The situation was particularly bleak, especially for the producers of grain. From the mid-1920s grain farmers faced competition from the more productive North Atlantic prairies, making it increasingly difficult to make a profit from growing grain[11]. The dire warnings on the state of the agricultural sector in Cyprus issued by Surridge and Oakden in the 1930s were sound[12]. Surridge argued that the grain farmers of the Mesaoria plains faced competition from cheap imported flour, and thus the income of dry land farmers was squeezed and the government needed to ensure some protection from foreign products. As appendix B indicates, the output of grain in Cyprus stagnated throughout the interwar period.

The situation was no different in Malta. Stockdale argued that although the agricultural sector was small it was still important in terms of employment[13]. He argued that the dry farming methods for certain crops had already been developed to a high degree of efficiency, but as the hard local wheat could not compete with softer imported flour the grain producing farmers were in crisis and needed government intervention in terms of import quotas or subsidies[14]. The results are confirmed by appendix C, as the output of grains in Malta also stagnated in the period.

[8] National Archives, London. File: CO69/45, Annual Report of the Director of Agriculture 1938, p.1
[9] Source: Appendix B.
[10] The examples are numerous such as: Clerides, *Ελευθερία*, 5 Jan 1924
[11] Federico., G., "Not Guilty? Agriculture in the 1920s and the Great Depression" *The Journal of Economic History*, Vol.65, No.4 (December 2005) pp. 949-976, pp.950-951. However Federico argues that the issue was not one of overproduction, but resulted from excess exposure to credit accumulated during the First World War
[12]Surridge, *A Survey of Rural Life* (1930) p.63; Oakden, *Report on the Finances* (1935) p.11
[13] Stockdale, F.A., *Report on the Present Condition of Agriculture in the Maltese Islands* (Malta: GPO, 1934), p.v
[14] Ibid. p.viii

Table 4.2: Per capita value added of agriculture, Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Cyprus	Malta
1921	6.9	1.8	1930	8.3	2.2
1922	7.9	2.0	1931	7.3	2.2
1923	8.5	2.0	1932	6.5	2.1
1924	7.7	2.2	1933	5.9	2.0
1925	8.0	2.3	1934	7.0	2.4
1926	7.6	2.3	1935	8.1	2.1
1927	8.2	2.3	1936	6.7	1.7
1928	7.4	2.2	1937	7.1	2.1
1929	8.5	2.5	1938	7.3	2.1

Note: In constant, PPP, pound sterling of 1938. Source: Appendix B (PPP adjusted); Appendix C; Table 3.2.

Table 4.3: Yearly growth of agriculture, Cyprus and Malta, 1921-1938.

Year	Malta		Cyprus	
	Value added (%)	Per Capita (%)	Value added (%)	Per Capita (%)
1921–1922	13.8	12.4	15.5	14.2
1922–1923	4.1	2.7	8.6	7.4
1923–1924	10.3	8.9	-7.7	-8.7
1924–1925	4.4	3.0	4.3	3.1
1925–1926	4.4	3.1	-3.7	-4.8
1926–1927	-0.2	-1.5	9.5	8.3
1927–1928	-2.7	-3.9	-8.7	-9.7
1928–1929	11.9	10.5	15.6	14.3
1929–1930	-8.8	-10.0	-0.8	-1.9
1930–1931	-0.6	-1.9	-11.3	-12.3
1931–1932	-3.0	-4.4	-9.4	-10.9
1932–1933	-1.6	-3.0	-7.8	-9.4
1933–1934	21.6	19.9	21.1	19.1
1934–1935	-10.5	-11.8	17.0	15.0
1935–1936	-17.2	-18.3	-15.1	-16.6
1936–1937	20.7	19.0	7.4	5.6
1937–1938	2.3	0.9	3.9	2.2
1921–1938	2.4	1.0	1.7	0.3
1921–1929	3.9	2.6	3.2	2.1
1930–1938	0.7	-0.7	-0.1	-1.7
GDP Peak to Peak (1925-1937)	0.5	-0.8	0.5	-1

Note: In constant, PPP, pound sterling of 1938. Source: Appendix B; Appendix C.

The growth of the agricultural sector was particularly disappointing especially in per capita terms. Federico argues that under certain conditions an increase in agricultural output can aid development by also providing food for the workers in other sectors, by creating a market for local manufacturing and by earning foreign currency[15]. Despite the fact that open economies can substitute the functions of the agricultural sector, it is still vital for a developing economy that the agricultural sector can increase its output to feed the increasing population while at the same time releasing labour to other sectors[16].

[15] Federico, G., "Italy" p.8; http://www.eui.eu/HEC/People/Faculty/Profiles/federico-publications.shtml as consulted on 12 Jan 2008

[16] Federico, "Italy" p.9

Table 4.4: Average annual agricultural growth, Southern European countries and colonies, 1921–1938.

	Period	Currency	Agricultural Value Added growth per annum (%)
Turkey	1923–1938	1990 Geary-Khamis Dollars	4.4
Italy	1921–1938	1990 Geary-Khamis Dollars	0.85
Spain	1921–1938	1990 Geary-Khamis Dollars	-1.3
Greece	1921–1938	1990 Geary-Khamis Dollars	5.1
Bulgaria	1921–1938	1911 Levas	4.0
Cyprus	1921–1938	1938 Pounds Sterling (Maltese Prices)	1.7
Malta	1921–1938	1938 Pounds Sterling (Maltese Prices)	2.4

Source: Bulgaria - Ivanov & Tooze "Convergence or Decline on Europe's South-eastern Periphery?" (2007), p.695; Turkey - Pamuk, "Intervention during the Great Depression - Another Look at Turkish Experience", Ch.12 in Pamuk and Williamson, *The Mediterranean…* (2000), p.321, Table 12.2; Italy, Spain, Greece – Federico, *Feeding the World*, (2005) Statistical Appendix; Malta / Cyprus – Table 4.2.

The poor growth of the islands is stark when compared to the agricultural sectors of Turkey, Bulgaria and Greece, shown in table 4.4. For most Southern European countries, the interwar period saw an acceleration of agricultural output; this took place despite the general reduction of the prices of agricultural products from their peak First World War levels[17]. This increase was mostly due to an expansion of inputs (land, fertiliser and labour), aided by the increasing government investment, regulation and protectionism[18]. Greece and Turkey achieved a substantial increase in yield and output through a greater use of new varieties, and combined in Greece with increased government intervention, agriculture achieved rapid growth after the depression[19]. For these countries the agricultural industry was a driving force of their economies. The agricultural industry of Malta and Cyprus did not sustain the islands growth, becoming a drag to their economies and falling behind neighbouring countries in terms of growth.

However, it is worth noting that the share of agriculture in GDP of the islands was much lower than in Bulgaria, Turkey and Greece, perhaps indicating that the sector was already at a higher level of development[20]. Even so the growth rate of Cypriot agriculture indicated stagnancy as more advanced neighbouring colonies were using the agricultural sector as an engine of growth[21]. A better performance of the agricultural sector would have led to the islands, particularly Cyprus, having rapid economic growth.

[17] Source: Output, Federico, G., *Feeding the World: An Economic History of Agriculture 1800–2000*, (New Jersey: Princeton University Press, 2005), p.18. Prices: Federico., G., "Not Guilty?" (2005), p.951

[18] Federico, *Feeding the World* (2005), pp.2-3; Ivanov, M. & Tooze, A., "Convergence or Decline on Europe's South-eastern Periphery?", (2007) p.693

[19] Mazower, M., *Greece and the Interwar Economic Crisis* (Oxford: Clarendon Press, 1991) pp.238-239 p.243

[20] Pamuk, "Intervention during the Great Depression" (2000), p.326, Kostis, K., *Αγροτική Οικονομία και Γεωργική Τράπεζα: Οψεις της Ελληνικής Οικονομίας το Μεσοπόλεμο vol. 1* [Agricultural Economy and Agricultural Bank: Visions of the Greek Economy in the Interwar Period], (Athens: Cultural Institute of the National Bank of Greece, 1990), p.32

[21] Such as the Mandate of Palestine. See: Metzer, "Economic Growth and External Trade in Mandatory Palestine…" in Pamuk & Williamson *The Mediterranean response...* (2000), p.365, pp.375-377

The lacklustre growth of the industry in the interwar period contrasted greatly with the island's experience after the Second World War. In Cyprus the growth of output in agriculture accelerated prior to independence in 1960, but was still growing at a slower rate than GDP[22]. The independence of Cyprus made possible government development projects aided by international contributions. These projects were successful in providing the infrastructure needed for irrigation and in providing incentives to intensive citrus production. Thus agricultural output increased through productivity gains, allowing labour to be available for the secondary and tertiary sectors[23]. As a result the output of agriculture in the period 1960-1969 grew by 9.9% per annum, faster than GDP, despite employment falling both relatively and absolutely. Agriculture was one of the dynamic drivers of Cypriot economic development after the war[24].

The post-war growth of agriculture was paralleled in Malta. Maltese data after the Second World War are not as robust due to their dependence on the income approach, which can be problematic with farming communities that rely on unpaid family labour. Despite such limitations the agricultural sector increased its relative share of GDP from 1954 to 1963, mainly due to government investment in aquifers and incentives towards the production of cash crops such as flowers[25].

Thus the key question in agriculture is to explain why the islands did not manage to achieve higher growth rates of production in the interwar period. The following sections will look at the sector in detail and argue that the islands were suffering from problems familiar to other Southern European countries. What made the islands different was that these problems were more extreme in the islands, which as colonies had governments who were less willing to intervene in order to resolve them.

[22] Source: Republic of Cyprus, *Statistical Pocket Book, No.1. The Cyprus Economy in Numbers and Main Socio-Economic Indicators* (Nicosia: Statistics and Research Department, 1978); GDP growth in constant 1950s prices 4.7% p.a., agricultural output growth 2.6% p.a.

[23] Christodoulou, D. *Contributions Towards a Development Plan for Cyprus Agriculture* (Nicosia, ROC, 1960), p.2

[24] Apostolides, A. & Apostolides, C. "Introducing Cyprus in the Economic Debate: The Resilience of Cypriot Agriculture in the 20th century 1921–2000" in Hendrickson, K.E., & Pappas, N.C (eds.), *Interpreting the Past: Essays from the 4th international conference on European History* (Athens: ATINER, 2007), pp.271-286, p.277. Source: Republic of Cyprus, *Statistical Pocket Book, No.1* (1978)

[25] Source: Central Office of Statistics, Malta, *National Accounts of the Maltese Islands* (1964), p.vi.

Constraints and missed opportunities

The historiography of Southern Europe suggests that countries where agricultural output during the interwar period underwent a belated "green revolution": the farming industry produced more mainly due to an intensification of labour effort through the use of labour-intensive cash crops[26]. Such a transformation could only take place when farming households were not subsistence farmers since the crop was produced exclusively for the market: by the interwar period most of the farmers of Southern Europe, including the Cypriots and the Maltese, were highly integrated into the market and willing to alter production in response to sufficient incentives[27].

The belated "green revolution" was aided by the increased intervention by government in the agricultural sector: Turkey, Greece and Bulgaria all underwent a process of land reform and increased government intervention. Some of the policies were necessary due to the problems resulting from the forced resettlement of refugees, and the need to induce autarky in order to save on foreign exchange[28]. The increase in output was partly due to increased yields: the yield of wheat in Greece during the period 1921-1938 increased by 2.6% per annum, while in Turkey it increased by 7% per annum from 1923 to 1938[29]. Yet the main reason for rapid output growth was mainly due to a switch to products with a higher value added for which the area held a comparative advantage, such as citrus fruit, tobacco and dairy products.

The increased government intervention in agriculture was a worldwide phenomenon during the interwar period. Intervention was growing prior to 1929, but the onset of the Great Depression led to a "real quantum leap of state intervention" as the political pressure to protect cereal production and aid indebted farmers mounted [30]. Many states were pushed reluctantly into more protectionist regimes, but as the interwar period progressed, the increase of protectionism became permanent[31]. European countries raised duties on agricultural products and introduced the mandatory use of domestic products. Southern European countries also implemented such policies: Greece increased

[26] Ivanov, 'Bulgarian National Income…', (Unpublished) p.12; Kostis, *Αγροτική Οικονομία... Τομ.1* (1990), p.32
[27] Munting, R. & Holderness, B.A., *Crisis, Recovery and War: an Economic History of Continental Europe 1918–1945*, (Hemel Hempstead: Philip Allan, 1991), p.206; Pamuk, "Intervention during the Great Depression" (2000), p.48
[28] Kostas, K. & Petmetzas, S., "Growth and Stagnation in the Greek Economy 1830–1940" (2007) p.10, Munting, R. & Holderness B.A., *Crisis, Recovery and War* (1991), p.206, Pamuk, "Intervention during the Great Depression" (2000), p.334
[29] Sources: Metric tons per hectare from Kostis, K., Αγροτική Οικονομία και Γεωργική Τράπεζα: Όψεις της Ελληνικής Οικονομίας το Μεσοπόλεμο. Τομ. 2 [Agricultural Economy and Agricultural Bank: Visions of the Greek Economy in the Interwar Period. Vol. 2], (Athens: Cultural Institute of the National Bank of Greece, 1990); Pamuk, S. "Agriculture and Economic Development in Turkey 1870–2000" in Lains P. & Pinilla V. (eds.) *Agriculture and Economic Development in Europe since 1870* (Routledge: Forthcomming)
[30] Federico, *Feeding the World*, (2005) p.194
[31] Mazower, *Greece and the Interwar...* (1991) p.203, p.214

duties on grain by over 50% during the great depression[32]. The result was a deep routed and persistent agricultural depression in many developing economies due to overproduction: British West Africa experienced similar issues of violence and rural debt as Cyprus[33].

The depressed price of wheat in the international market kept the price of grain at very low levels in Cyprus and Malta. Yet protectionism was not an option: their colonial status prevented the islands from taking independent decisions on tariff protection. As parts of the British Empire the islands were required to provide imperial preference towards Britain and the Commonwealth, with some Commonwealth members being extremely efficient cereal producers[34]. As a result the introduction of imperial preference in 1932 did not increase the price of wheat in Cyprus and Malta: cheap European flour was replaced by cheap flour from the British Empire[35]. This was to the benefit of the urban minority of Cyprus but worked against its rural majority, especially in the populous villages of Mesaoria. In 1932 the Cypriot department of agriculture reported that the volume of flour imported had increased by 61% while the value remained constant during the great depression, placing further pressure on the incomes of domestic grain producers at a time when their output was already low due to the ongoing drought[36].

It was not only the cereal producers whose income was squeezed during the interwar period. Exports of carobs and potatoes were also reduced due to the islands' being tied to the gold standard. The decision by Britain to go back on the gold standard in 1925 hurt Cyprus' farming exports to Greece and re-aligned trade towards the UK and Egypt. Malta, being overwhelmingly dependent on food imports, must have been a net beneficiary of such change, even if it reduced its limited exports of potatoes. The decision to leave the gold standard in 1931 should have provided agricultural exporters with some respite, allowing for an increase in exports. However, Cyprus' major export partners, Greece and Egypt, reinforced their own protectionist regimes[37]. Britain and Greece did not sign a clearing trade treaty, which prompted the Greek government to discourage trade with the Empire in order to save on foreign exchange[38]. Egypt increased the duties on all agricultural products including those of the empire in 1929, thus eliminating the second largest market for Cypriot exports. The protectionist measures of Egypt were a great blow to Cypriot farmers as it eliminated the significant exports of fresh fruit, leading to a decline of Cypriot agricultural

[32] Munting, & Holderness, *Crisis, Recovery and War* (1991), p.33
[33] Brown, I., *The Economies of Africa and Asia in the inter-war depression* (Padstow: T.J. Press, 1989) p.3, p.78, p.81
[34] Meredith, "The British Government and Colonial Economic Policy, 1919–1939", (1975), p.485, p.497.
[35] Oakden, *Report on the Finances* (1935) pp. 160 - 162
[36] Department of Agriculture, "Introduction" *The Cyprus Agricultural Journal, part 4, Vol.XXVII* (1932)
[37] Oakden, *Report on the Finances* (1935) p. 23
[38] Mazower, *Greece and the Interwar Economic Crisis* (1991), p.220

exports[39]. The added benefits of the imperial tariff system did not materialise until 1937 because the realignment of Cypriot exports towards the British market was slow due to the scarcity of direct transport links.

The relatively low price of agricultural products led to the rise rural debt in real terms, leading to massive debt default. During the First World War the international price of grain was high. As table 4.5 indicates the prices of agricultural products rose during the First World War. The price of wine, cotton, wheat and cheese more than doubled during the war, leading to farmers borrowing from moneylenders to buy more land to increase their production. The unsettled situation around the Mediterranean meant that prices did not fall until 1921, but the reduction in prices was very sudden. This drop in agricultural prices led to a dramatic increase in farm debt, making repayment next to impossible[40]. In response to the debt the moneylenders forced farmers to sell their land, but by the mid-1920s the price of forced land sales was so low that land sales petered out. The debt of rural producers was the most important issue in the Cypriot press and the problem remained unresolved until the start of the Second World War[41].

[39] Oakden, *Report on the Finances* (1935) p.18
[40] Lanitis, *Rural Indebtedness…* (1944; revised 1992) , p.18, pp.22-23; Cyprus, *Statistical (Blue) Book 1921* (Nicosia, GPO, 1922), Section: "A Summary of Industrial Development".
[41] Lanitis, *Rural Indebtedness…* (1944; revised 1992) p.15

Table 4.5: Price Indexes of Cypriot products, 1912-1938

	Carobs	Potatoes	Wine	Cotton	Wheat (Wholesale)	Wheat (Retail)	Goats	Cheese
1912	90	88	305	130	148	90	300	108
1913	90	86	338	135	131	100	300	131
1914	88	83	283	132	134	100	200	96
1915	98	133	259	116	260	160	150	96
1916	106	210	534	129	322	230	290	92
1917	107	173	526	253	342	240	250	82
1918	121	254	506	322	329	200	350	121
1919	133	250	763	292	329	360	350	157
1920	164	263	933	460	452	360	325	323
1921	93	196	275	152	226	200	260	323
1922	91	186	275	158	159	160	200	254
1923	81	158	175	206	130	110	110	185
1924	93	194	125	195	213	150	200	197
1925	113	159	175	168	227	180	150	185
1926	93	142	175	164	216	180	150	195
1927	95	156	175	163	197	180	200	185
1928	128	154	163	217	242	180	200	156
1929	135	150	138	197	202	140	225	179
1930	64	106	125	123	140	130	175	154
1931	45	138	125	103	117	110	100	159
1932	65	107	125	22	106	100	100	133
1933	77	79	125	120	112	80	100	103
1934	89	104	125	129	105	80	100	97
1935	95	111	125	136	98	100	100	77
1936	83	104	125	-	137	100	100	77
1937	95	90	125	132	-	100	100	100
1938	100	100	100	100	100	100	100	100

Source: Cyprus, *Statistical (Blue) Books*, (1911-1938).

Under pressure from the Cypriot legislative assembly, a rural survey was commissioned to evaluate the debt of the rural population. The survey report argued that majority of rural households had unserviceable debt[42]. It argued that peasants were prevented from repaying due to a vicious cycle of low agricultural prices, small and fragmented land holdings, and the high interest charged which meant that if a repayment was missed the interest on the missed payment made the debt unserviceable[43]. The report argued that while there were some unfair practises used by the moneylenders, the interest charged by the moneylenders is necessary due to the high rate of debt default and due to the lack of alternative venues for credit[44]. Matters were especially grim for grain producers in the large Mesaoria valley surrounding the capital, Nicosia. The grain farmers could not compete with imported flour due to the small size of their plots and outdated methods of production and as a result the report suggested protection from foreign flour imports as a policy to alleviate

[42] Surridge, *A Survey of Rural Life* (1930) p.32

[43] Feinstein, Temin, & Toniolo, *The European Economy…*(1997) p. 73, fig 4.2; Surridge, *A Survey of Rural Life* (1930), p.63

[44] Despite its perceptive conclusions the report failed to spot the problem of a reduction of money lending credit due to the debt crisis which is discussed below.

their plight[45]. The colonial government responded to the reports' suggestions by placing import duties on flour and wheat, as well as a minor duty on flour from the British Empire. However, the duties were too low to be effective: Oakden regarded them as inadequate in protecting the Cypriot grain farmer, believing that their sole purpose was to increase government revenue[46]. He argued that the way to improve the situation of grain farmers was by giving incentives to switch to other products, since domestic wheat was of a hard type that was considered inferior and thus imported flour would always be preferred by Cypriot millers.

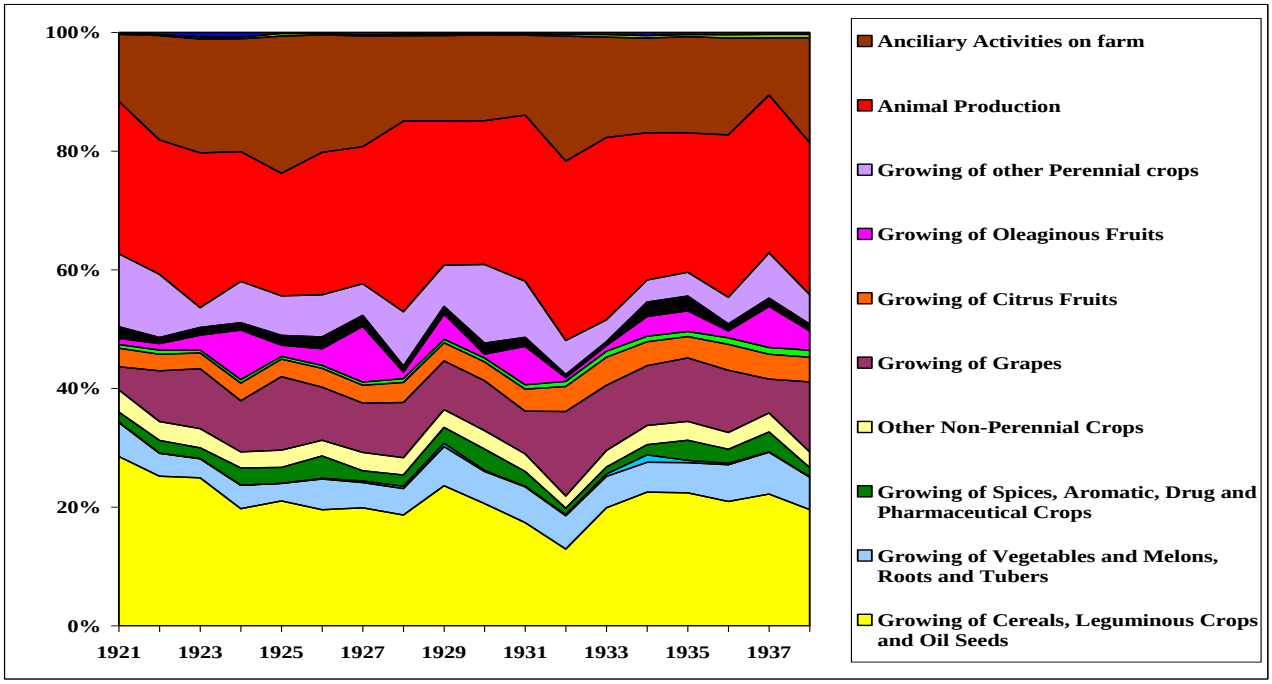
Yet for the reasons argued below, it was not possible to switch to another product without outside support. The survey indicated that at 1929 prices, the average grain farmer's profit was very marginal, and profit was only guaranteed on years of exceptionally good rainfall[47]. Yet the price of grain continued to decline throughout the 1930s, further squeezing the income of grain farmers[48].When farmers make a loss on a crop they will go on producing as long as revenues cover their variable costs, unless it becomes more profitable to move to the city for work, since farmers did not have the capital for a shift to another crop[49]. Chapter 3 has indicated however, that with the exception of mining, the demand for labour in manufacturing was not increasing and as a result the grain farmers continued to produce grain. The situation was not different at the end of the period: department of agriculture experiments from 1934 to 1939 attempted to find the most profitable combination of labour, capital and fertiliser in order to grow cereals, but the research argued that no method was profitable because of the depressed value of cereal prices[50]. The only way for the indebted grain farmers to maintain their income was by producing other products.

Yet, as figure 4.4 indicates, Cyprus remained largely dependent on its staple products. The increase in fruit production was very gradual, thus the shift towards labour-intensive products was slow. Cereals and carobs remained key products despite not being able to compete against imported flour and industrial animal fodder. Livestock production and animal products were already a significant sub-sector producing 25.7% of total output in 1921, and its relative share was expanding. However, the drought of 1931–1933 checked the sector's growth since the mass livestock deaths during the drought led to the de-stocking of the flocks. Although growth continued after 1933, the rate of growth was slower as the livestock capital was only gradually restored to its pre-drought levels. The

[45] Surridge, *A Survey of Rural Life* (1930), pp.157-158
[46] Ibid. pp.160-162
[47] Surridge, *A Survey of Rural Life* (1930), p.63; Munting, & Holderness, *Crisis, Recovery and War* (1991) p.17
[48] The retail prices of wheat in Nicosia declined in 1934 to 57% of their 1929 level, and remained at a low level until 1938. Source: Cyprus, *Statistical (Blue) Books*, (1921–1928)
[49] Federico, "Not guilty?" (2005) p.972
[50] Department of Agriculture, "Summary of work at the central experimental farm" *The Cyprus Agricultural Journal* vol. XXXIV, issue.1 (1939) p.10

inability of Cypriot farmers to change the crops they produced was behind the very low agricultural growth rates.

Figure 4.4: Agriculture per sub-group as share of value added (%), Cyprus, 1921–1938.

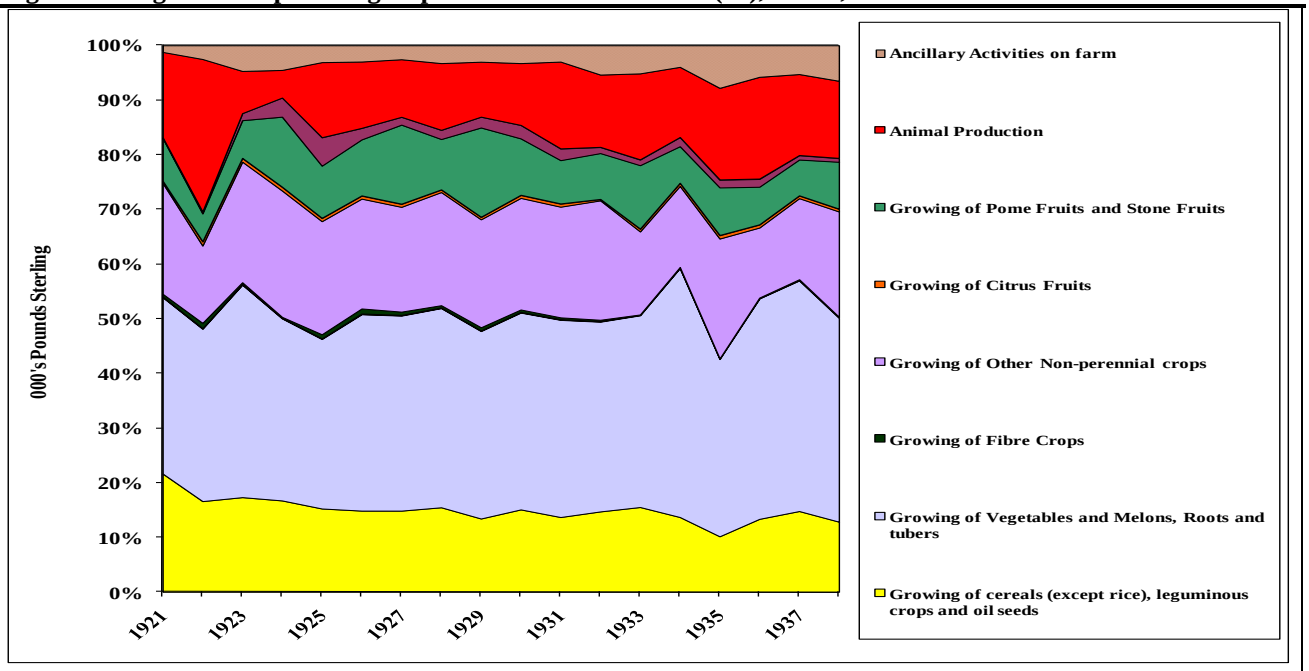


Source: Appendix B.

Figure 4.5 indicates that Malta also did not switch production to more labour-intensive products. Bowen-Jones *et al* stated "that the importance of cereal cultivation remains so great, in spite of growing dependence on imported grains, seems strange"[51]. The staple products (tomatoes, potatoes and cereals) remained important throughout the period, with the increase in fruit production being gradual. In the animal industry there were changes within the industry, with an increase in pork production due to the demands of the Royal Navy for bacon[52]. The abandonment of the Malta by the fleet led to a rapid decline in demand for animal products, with animal products falling back to its 1921 of output.

[51] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.188
[52] National Archives, Rabat. File: The M.H. Hirst Documents, "Radio broadcast by M.H. Hirst on 31 Aug 1942" p.2

Figure 4.5: Agriculture per sub-group as share of value added (%), Malta, 1921–1938.



Source: Appendix C.

Thus the failure of the islands in producing comparable growth rates to other South European industries was the lack of a shift to crops that were labour-intensive. This is particularly evident in cereals: it was simply not possible for the Cypriot or Maltese farmer, armed only with primitive farming methods and equipment, to compete with the more fertile and productive cereal regions of the New World. What stopped the switch was a host of problems of which credit was the most significant.

The lack of a product switch was partly water related. The greatest limitation to agricultural production on the islands was the lack of aquifers[53]. The rainfall in the central and eastern Mediterranean is erratic and variable. The agricultural output of Cyprus and Malta, presented in table 4.2, was closely correlated with the level of rainfall. In Cyprus there is an even chance of high, average or low rainfall every year. Yet during the interwar period the lowest three years of rainfall were consecutive, from mid-1931 to mid-1934[54]. The catastrophic results of the drought have been mentioned above. Low rainfall in 1935 and 1936 was also a contributing factor to the steep reduction in agricultural output in Malta[55]. Bowen-Jones *et al* argued that the lack of water resources was the most serious problem facing Malta under British rule, and that it remained critical

[53] Mediterranean: Federico, *Feeding the World…* (2005) p.44; Malta: Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.43: Cyprus: Charalabous & Georghallides, *Focus on Cyprus*, (1993) "Water Resources of Cyprus"

[54] Extreme drought took place from mid-1931 until mid-1934 (rainfall was less than 80% of normal). Source: Meteorological Service of Cyprus, *Το κλίμα της Κύπρου* [The Climate of Cyprus], (2008)

[55] Malta, *Statistical (Blue) Book 1937* (Valletta: GPO, 1938), Section 22 "Summary of Industrial Development"

until the 1960s[56]. It was clear to contemporaries that increased irrigation would enable an increase in output by replacing grain with citrus orchards: experts in Malta suggested that the irrigated area "could doubtless be considerably extended… were capital available", while the governor of Cyprus argued that with additional irrigation the island could be turned into the market garden of Britain[57].

However additional irrigation entailed huge capital investment which the farmers of Malta and Cyprus could not undertake, as they exhausted all the water resources that were accessible within their limited means[58]. Other European governments took an active interest in investing in irrigation projects during the interwar period but such projects were very expensive[59]. There were some efforts in Cyprus by the government through the Western Mesaoria Project and the Artesian Mesaoria Project, but the results were less than impressive. The substantial increase of water on the Mesaoria took place after the Second World War, as post-war irrigation investment transformed a large part of the plain into citrus orchards, whose productivity per acre was as efficient as that of the advanced orchards in Israel[60].

Thus the government did try to aid agricultural investment, but the execution of the irrigation projects was inefficient and produced poor results: the government was unwilling to spend substantial amounts and thus focused on schemes that were small and on trapping water runoff. As a result water was available only in the spring and only when rain was abundant[61]. The projects could not be used to convert the Mesaoria plain into orchards as citrus fruits needed an annual rather than a seasonal water supply. Thus water was expended on grain crops with little gain and as a result these projects were abandoned by 1945 as they were costly, wasteful and inefficient[62]. Government drilling did discover underground water resources in the western part of the plain, but the funds for their exploitation were not released until after the Second World War.

The lack of sufficient water in Malta was just one reason for the lack of further specialisation in the agricultural sector. Malta had clear geographical limits on agricultural development. The islands are formed by steep limestone hills with very thin soils, limiting the quantity and quality of cultivated soil. As a result, fields in Malta are constructed rather than cultivated. The limestone is cut and

[56] Bowen-Jones, *et al, Malta: Background for Development* (1961), p.43
[57] Stockdale, *Report on the Present Condition...* (1934) p.v. Irrigated land was just 4% of total agricultural land. *Φωνή της Κύπρου* [Voice of Cyprus], "Η ομιλία του Κυβερνήτη" [The Governor's Speech] 7 Jul1928
[58] Federico, *Feeding the World* (2005) p.47
[59] Cohen, J. & Federico, G., *The Growth of the Italian Economy 1820–1960* (Cambridge: Cambridge University Press, 2001), p.40
[60] Apostolides & Apostolides, "Introducing Cyprus in the Economic Debate…" (2006) p.278
[61] Raeburn, C., *Government of Cyprus, Water Supply and Irrigation Departments: Water Supply in Cyprus: a General Report, Revised Edition,* (Nicosia: GPO, 1945) p.2,
[62]Ibid. p.19

placed as a wall to create terraces, which are then covered by any soil found during the excavation of the limestone. The resulting fields are very small, and have only a thin layer of soil, and thus are not amenable to mechanical cultivation methods[63]. The only way to intensify production was with the introduction of more water and more soil, which required substantial investment and know-how. However such investment was not forthcoming from private or government sources, and as a result the arable farmers of Malta continued producing grain while trying to find part-time work in the service sector[64].

These geographical limits in Maltese arable agriculture did not prevent the livestock sector from becoming quite labour intensive prior to the First World War. This was the case in beef production and bacon production, which developed very intensive forms of production attuned to the needs of the military presence on Malta[65]. The beef and cow milk sector was aided by the presence of a large British community, with a preference for beef and for cow's milk, and with a higher purchasing power than the local Maltese community[66]. These industries minimised the use of scarce fodder by importing large numbers of lean stock for a short period of fattening. The fattening of bullocks took place in stalls with intensive feeding using imported feeds of high caloric value[67]. The product was not of high quality, and value added per head of cattle was low because production was dependent on imported stock and fodder, but the sector was efficiently limiting the opportunity cost of producing fodder on scarce land. The intensive production of the beef and dairy milk sector overtook the staple goat sector in terms of output.

Goats provided most of the milk drunk by the local population but goat husbandry was far from an intensive use of agricultural land and labour. Yet the shepherds delivered their product by directly by taking their goats to the city to deliver at the doorstep intensifying the labour of shepherds who took care of both the production and retailing of their product[68]. Thus there were ways to intensify animal production, even if the intensification of arable production depended on additional water resources.

[63] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.86, p.188,
[64] Ibid. p.293
[65] Metwally, *Structure and Performance of the Maltese Economy* (1977) p.6
[66] Food Preferences: Vassallo, C., *The Malta Chamber of Commerce 1848–1979: An Outline History of Maltese Trade* (Marsa: Malta Chamber of Commerce, 1998) p.77. Army consumption: Stockdale, *Report on the Present Condition…* (1934) p.xii
[67] Stockdale, *Report on the Present Condition…* (1934) p.x
[68] Potts, H. W. *Lecture on the Improvement of Livestock of Agriculture Delivered at the Palace* 06th February, 1930 (Malta: GPO, 1930). p.4

Thus for Malta the lack of potential for further agricultural growth was clear: although its prospects were also affected by issues of land fragmentation, the main problem behind its growth performance was that the island was already operating as intensively as the geographical limitations and water resources allowed. Its arable sector was challenged by geographical limits, while the animal sector was already a labour intensive sector, transformed by the demand for of the British armed forces. Alleviating issues of credit, land fragmentation, and mechanisation would have improved its performance but such growth would still be limited by the geography and the lack of water.

Water was not the only constraint in intensified labour effort. Another serious constraint on agricultural performance was the very fragmented ownership structure on the islands[69]. Land was not just broken down into unsustainable fragments but also scattered in several plots around a village. This created farms that were uneconomic and thus it was more difficult to switch to other products. Although this problem was common in South Europe, land reform reduced its impact in the area; yet as table 4.6 indicates, the fragmentation of land ownership was very serious in Cyprus and Malta.

Table 4.6: Agricultural population and farm size in Southern Europe, circa 1930.

Country	Agricultural population per Km^2 of arable land	Percentage of population by farm size, (%)			
		1-5 ha	5-10 ha	10-50 ha	Over 50 ha
Bulgaria	95.4	29.1	37.3	32	1.6
Czechoslovakia	69.4	20	19.5	39.4	21.1
Greece	86.7	16.9	11.7	21.6	49.8
Hungary	63.1	14.6	12	22.1	51.3
Italy	53.4	17.5	13.6	26.3	42.6
Poland	86.9	14.8	17	20.9	47.3
Romania	79.7	28.1	20	19.7	32.2
Spain	34	18.8	7.1	15	59.1
Yugoslavia	100.1	28	27.9	35.3	9.7
Cyprus	95.6[+]	38.4	44.5	16.9	N / A*
Malta	1048.5[+]	70	30	N / A*	N / A

Notes: * Some large estates did exist but were not enumerated separately for Cyprus and Malta; they did not make a large section of arable land. [+]For Cyprus and Malta the rural population was used. Source: All countries except Malta and Cyprus- Ivanov and Tooze, "Convergence or Decline on Europe's South-eastern Periphery?" (2007) p.688; Malta - Malta, *Census...1931* (1932), Malta, *Statistical (Blue) Book* 1926(Malta: GPO, 1927), Bowen-Jones, *et al.* (1961) p.289 Cyprus- Hart-Davis, *Cyprus…1931* (1932); Surridge, *A Survey of Rural Life…* (1930) pp.54-58, Lanitis, *Rural Indebtedness…* (1992), p.9.

What is apparent is that Malta was unique in having such a large number of people living on agricultural land. This is a function of the population pressure brought to bear on a limited amount of cultivated land, but also due to the fact that most rural inhabitants only worked on the land part-

[69] Oakden, *Report on the Finances* (1935), p.15

time. The agricultural industry acted as a buffer for the armed forces: employment in serving the navy would take up most of the time of the rural population during times of demand, only for people to fall back on agriculture at times when the fleet was not in harbour[70]. Bowden-Jones argues that the function of the sector as a buffer resulted in a "technical static, status declining and credit starved industry which from time to time lost its most vigorous and enterprising young workers or gained a flood of generally poor and semi-skilled workers"[71].

There are no data on how many of the population classed as farmers worked full time in the sector. In 1961, only 14% of those who stated that they were farmers had agriculture as their only occupation[72]. In 1891 it was estimated that 71% of farmers worked full time: this suggests that there was a decline in the number of people working full time in agriculture from 1891 to 1963[73]. This is corroborated by Richardson and Thorp who argued that there was a gradual increase of the number of farmers working part time in agriculture in the interwar period in Cyprus and Malta[74]. What is surprising is that Cyprus was being considered by the British authorities as a target for rural immigration, and yet the area of farmland available was very small, with the population pressure on the land being as bad as the worst in Southern and Eastern Europe[75].

A greater hindrance to intensifying production was the average size of the farm. The optimal size of a farm community is a hotly debated topic: there is no consensus since optimality is dependent on climate, soil fertility, farm management and the crops produced[76]. Family farms can be more efficient than large estates, yet they can also be inefficient if they are too small and unable to invest sufficient capital to introduce mechanised production methods or introduce new crops. As table 4.6 indicates, Cyprus and Malta had the largest number of farms under five hectares in all of Southern and Eastern Europe. Even if the farmers worked on their farms intensely, such fragmented land ownership resulted in uneconomical farms, especially since their land was scattered in several plots around a village and not consolidated in a single holding[77]. The owners of small farms could not consolidate their land and switch easily to producing other products, and sought other employment to compensate their income when possible[78]. There are examples how small size could prevent

[70] Richardson, "Aspects of the Demography..." (1960) p.54
[71] Ibid. p.120
[72] Source: Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.188
[73] Ibid. p.292
[74] Richardson, "Aspects of the Demography…" (1960); Thorp, *Cyprus*… (1961), p.19
[75] For the attempts by the British to create immigrant farming communities in Cyprus: See Chapter 3, p.58 footnote13.
[76] Federico, *Feeding the World*… (2005) p.175, p.177, p.180
[77] For more information on the issue of land fragmentation and post-Second World War efforts for consolidation see: Karouzis, G. *Land Consolidation in Cyprus, 1970–1990* (Nicosia: Ministry of Agriculture, 1991) and Bowen-Jones, *et al*, *Malta: Background for Development* (1961).
[78] See: Chapter 4, p.130, footnote 26

product diversification in Greece: the areas around Komotini and Drama switched from tobacco to cereals when the relative price of products reversed, but the areas around Kavalla and Xanthi found diversification difficult since landholdings were tiny at 1 hectare or less[79]. Thus small and fragmented landholdings acted as a barrier to intensive agriculture and prevented product diversification.

The fragmented landholding was partly due to the land ownership system in place. Cyprus maintained the Ottoman system of inheritance that provided all relatives with a share of the property of a deceased family member and allowed for all inheritance to be split into shares. This system of inheritance tended to fragment land, water rights and even trees into unsustainable shares[80]. The inheritance system prevented change since land kept fragmenting into pieces unless the farmer had enough credit to buy out all other parties and covert the land to other production. There were very few large farms in Cyprus since the majority of the population held small rural holdings: Cyprus was an island of rural smallholders.

The system of land ownership in Malta was also problematic. Most land in Malta was owned by the British armed forces, the church or local nobles. The land was given to tenants on long freeholds, in theory on an emphyteutic lease, in order to maintain the terraces and improve the quality of the farmland[81]. However, in practice the leases were frequently revised and given to new owners, leading to the gradual parcelization of land into ever smaller farms[82]. The reason behind the reduction of the share of land is apparently related to the growth of the Maltese population, which created an ever increasing class of landless peasants. This was a situation that the church was anxious to avoid, and therefore freeholds were being broken down into ever smaller portions by the church[83]. Thus the combination of geology and population pressure led to the total fragmentation of Maltese farmland making it very difficult for Maltese farmers to change production or invest in mechanical methods.

All these issues made a shift to labour-intensive products difficult, yet the main reason for the lack of a "green revolution" were the twin issues of credit and debt. As mentioned previously, Cyprus suffered from high levels of defaulted rural debt as land was purchased during the First World War, leading farmers overexposed to moneylenders after the sudden decline in prices in 1921. The rural debt was the major economic issue of the day, prompting angry newspaper criticism and several

[79] Mazower, *Greece and the Interwar*... (1991), p.121
[80] Lanits, *Rural Indebtedness*… (1991) p.4
[81] An emphythetic lease is a lease that states in the contract that the land has to be improved in specific ways, and it was the common lease given by the Church of Malta. Busuttil, "Agriculture in Malta" (1993) p.18 - 19
[82] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.290, Figures 133 and 134.
[83] Ibid. p.293, p.312

governmental reports. Surridge estimated in 1929 that rural debt was as high as £1,769,043 Cyprus pounds. Oakden argued that the defaulted debt increased during the great depression and drought, suggesting that the debt increased by 1934 as £2,000,000 Cyprus pounds[84]. Thus the rural debt of Cyprus grew from 36% in 1930 of GDP to 42% in 1934. The continued low prices of the main arable products also increased the debt that became unserviceable. The issue was considered so detrimental to the war effort that a Debt Settlement Board was set up in 1940 in order to settle the interwar debt that was still outstanding[85]. The board estimated the total rural debt had increased to £2,329,000 Cyprus pounds. The Debt Settlement Board allowed farmers and creditors a forum to renegotiate any loans in order to liquidate any outstanding rural debt, with great success since it put pressure the creditors to accept punitive settlements, leading to many moneylenders settling outside the board[86].

The most important reason for the stagnation of Cypriot agriculture in the interwar period was that the defaulted debt disrupted the credit cycle, leading to a credit crunch. The defaulted rural debt reduced the capital available by moneylenders for farming credit. Credit was necessary for farming in Cyprus due to the variable weather and the fact that all the main crops were harvested in the summer. The farmer would borrow money prior to the sowing of a crop in order to pay for its production costs and for his upkeep until harvest time: the moneylender charged a high rate of interest on that amount, usually secured on mortgaged property[87]. The market for farming credit was still controlled by moneylenders, although co-operative credit societies and an agricultural bank were established during the period, as explained below[88]. Quite often the moneylenders in Cyprus and Malta were also the wholesalers of agricultural products, and they would ensure they purchased the harvest from the farmer at a lower price predetermined when the loan was taken[89].

The failure of farmers to repay their loans from 1921 onwards led to the freezing of a large part of the capital held by moneylenders. The farmers found the price of their products decrease in the interwar period, making the repayment of their loans unsustainable. The moneylenders found most of their capital frozen in defaulted loans; their efforts to recapture their investment through the forced sale of land and by sequestering crops brought very limited results as the price of land and

[84] Surridge, *A Survey of Rural Life* (1930) p.37; Oakden, *Report on the Finances* (1935) p.105
[85] Source: National Archives, London. File: CO69/42 "Annual Report of the Land Registration and Survey Department 1934*"* p.4; Cyprus, *Report on the activities of the Debt Settlement Board* (Nicosia: GPO, 1945) pp.1-3
[86] Lanitis, *Rural Indebtedness* (1944; revised 1992) p.17; Cyprus, *Report on the Activities of the Debt Settlement Board*, (Nicosia: GPO, 1945) p.1
[87] Surridge, *A Survey of Rural Life* (1930), p.36, p.44
[88] Αγκαστινιώτης K.M. [Agastinotis, K. M]. *Ο Συνεργατισμός:Γέννηση και Ανάπτυξη του εν Κύπρω* [Co-operatism, Britsh and Development in Cyprus] (Nicosia, 1965) p.7
[89] Georghallides, *Cyprus and the Governorship…* (1985) p.149

crops declined. The drought and the great depression killed off the moribund credit market. The consecutive poor rainfall led to a failure of most crops, increasing the defaulted loans, while the moneylenders could not afford to buy the crop from the farmers since the harvest price was even lower than the predetermined sale price. Thus the dual calamity of the great depression and the drought in Cyprus led to a complete dislocation of the rural credit system: the moneylenders had no money to lend and the farmers could not sell their crops at remunerative prices. The results are described by Clerides: The cycle of credit was in a logjam: even people with substantial capital and credits became insolvent as they could not collect their investment from their debtors[90]. The lack of re-payment led to a mass of expensive lawsuits, which resulted in even solvent farmers losing their property, leading them to flock to the city to seek work as labourers. Yet the lack of industry meant that the landless tried to make a living as peddlers and petty vendors.

Thus the issue of the debt problem and credit were interrelated. The traditional credit market could not be operational without restoring liquidity to the moneylenders, and the only way for the moneylenders to reclaim their debt was by the return to profitability of the farmers. Yet most farmers could only raise their income with product diversification; such diversification required substantial capital that was more than what the farmer could borrow or the moneylenders could lend. The Cypriot press argued that only a long-term agricultural recovery plan that took into account the need for credit provision and product diversification could lead Cyprus out of the crisis and that only the government could implement such a plan[91].

The case study of the Mesaoria plain can be used to best explain the critical role of credit and the need for government intervention. Mesaoria was a large central plain primarily used for cereal dry-farming. It was clear to contemporaries that where underground water was discovered the land could be converted to intensive citrus production with sufficient investment in irrigation and trees[92].

However, the cost of converting land to citrus production was prohibitive for the farmer: using the costs provided in the Cyprus agricultural journal, the cost for converting an acre of land to citrus production was £737 Cyprus pounds in 1938, more than 44 times the annual per capita income[93]. The high cost is due to the fact that a newly established citrus plantation required four years from when the trees are planted until the first crops were produced, while needing constant attention and

[90] Clerides, *Ελευθερία,* 5 Jan 1924, 30 July 1927
[91] There were many calls for a comprehensive study to alleviate the agricultural crisis: Clerides,, *Ελευθερία,*30 July 1927
[92] Georghallides, *Cyprus and the Governorship…* (1985), pp.30-31
[93] James, H.M. and Koumides, C. "An Analysis of Farming Costs in Cyprus (Part 2)", *Cyprus Agricultural Journal,* (1939) pp. 99 - 100

expense prior to the production of the first crop. Thus converting production to citrus was only possible with the aid of a large investor such as some citrus orchards outside Limassol, Larnaca and Famagusta, which were funded by Jewish interests[94]. Since other larger investors were not forthcoming, the funds necessary to covert parts of Mesaoria into orchards needed to be provided by the government. It was not possible for the owners of small and scattered plots to borrow such an amount, yet only with a shift of products produced would the "green revolution" take place in Cyprus.

The pivotal importance of credit is made clear from the way in which Cypriot farmers reacted to the falling agricultural prices. Farmers found it difficult to secure the large capital needed to shift to more intensive forms of production, thus smallholders attempted to increase the productivity of their land on the products they were already producing, by invested in smaller capital outlays that they could afford, such as increasing the use of artificial fertiliser. As a result, Surridge claimed that the use of artificial fertiliser in cereal production was at times excessive[95]. The farmers wanted to invest in their land and did so in any way that they could.

The local press and the Cypriot legislative councillors were aware that the lack of credit was harming the largest sector of the economy. Georghallides convincingly proved that their chief demands were for urgent action on the issue of rural debt, often providing suggestions of real merit[96]. The government of Storrs shared their view and attempted to solve the issue. However it attempted to do so without disturbing the central policies of balanced budgets and government non-intervention in the economy. Yet, the necessary credit to transform Cypriot farming necessitated a much greater intervention by government, the only institution in Cyprus that could provide finance towards increasing the amount of land brought under labour intensive cultivation crops. Ad-hoc measures such as the failed agricultural bank absorbed significant government expenditure while better, well-thought out plans of the Cypriot legislative councillors were ignored.

The problem was not that the government did not attempt to solve this problem, but that its parochial efforts led to limited results at great cost. Governor Stevenson was very reluctant to intervene, but after sustained pressure from the Cypriots in the legislative council, a small agricultural bank was jointly set up by the government and the Imperial Ottoman Bank in 1925. Its aim was to provide medium term loans to farmers but is loans were not linked with efforts to

[94] Goldman, D. "Jewish Settlers in Cyprus during the British rule, 1880-1940s" *Journal of Cyprus Studies* (2006), http://www.highbeam.com/doc/1G1-164327863.html as consulted 5 June 2009
[95] Surridge, *A Survey of Rural Life* (1930) p.63
[96] Georghallides discusses these issues extensively in: Georghallides, *Cyprus and the governorship…* (1985), Chapter 4. Georghallides. *A Political…* (1979), Chapter 8.

restructure production towards more remunerative crops: the maximum a farmer could borrow was £100 and that was far less than what was needed to convert an acre of land into a citrus orchard. Cypriot council members warned the government that the original capital of £50,000 was too small and the banks operating method increased the chances that the bank would collapse but their warnings went unheeded by the colonial government[97].

Unusually for a British governor, Stevenson's replacement, Sir Ronald Storrs (governor from 1926–1931) was eager and willing to intervene in order alleviate the rural crisis. Storrs expanded the available capital of the agricultural bank, thus expanding the loans to farmers via their co-operatives[98]. This led to a rapid expansion of the co-operative system, which was placed on an unsecured footing: credit was made available to farmers by the agricultural bank through of the co-operative societies yet the societies themselves were not liable for the loan and they did not have any of their own money invested. As a result co-operative credit societies were created in order for villages to access loans by the agricultural bank, yet these societies were poorly run and were not established on the co-operative principles of mutual liability and co-operation[99]. In 1925 there were just 29 co-operative credit societies in Cyprus, but they grew to 326 in 1930 as a result of Storr's expansion of available credit; yet very few societies were capable in keeping their accounts in order[100]. The great depression led to the collapse of this unsound lending system.

The moribund agricultural bank, who already had a substantial share of its capital tied in unserviceable debt, saw its remaining capital disappear due to the additional debt defaults of farmers hurt by the depression; as a result over a third of the co-operative credit societies were subsequently liquidated[101]. Under Storrs the bank capital was expanded by a government loan, floated in London at 5%, for £200,000 pounds sterling, while the Imperial Ottoman bank placed another £50,000 as additional capital[102]. The bank would theoretically loan to co-operative credit societies for a ten year period at the rate of 8%, and co-operatives would then loan the same amount to a farmer for ten years for an interest of 9% or 10%; however in practise the bank made such advances directly to the farmers, with the co-operatives having no incentive or ability to enforce

[97] Cyprus, *Minutes of the Legislative Council of the session of 1925, part I* (Nicosia: GPO, 1926) 12 Jan 1925 ,Metropolitan Mylonas, p.19
[98] Georghallides, *Cyprus and the governorship…* (1985) pp.150-151
[99] Angastinotis, *Ο Συνεργατισμός…*(1965), p.58, p.64; Georghallides, *Cyprus and the governorship…* (1985) p.140;
[100] Lanitis, *Rural indebtedness and …*(1944; revised 1992) pp.78-82
[101] Angastinotis, *Ο Συνεργατισμός…*(1965), p.59
[102] The government effectively blackmailed the Ottoman bank in order for it to provide more money for the agricultural bank: National Archives, London. File: SA1/1059/1926/1 Copy of Letter: Ottoman Bank Chairman to Undersecretary of Colonial office, 16/12/1926; 08/02/1932;

repayment, as none of their capital was being invested[103]. The rate of interest was not as high as moneylending but high enough to attract farmers who were pushed by their moneylenders for a repayment of their loans. As a result the least solvent farmers were those who borrowed from the bank to repay their moneylenders and then defaulted to the bank. This resulted to the bank rescuing moneylenders rather than alleviating the problem of credit agriculture. As a result the bank failed to get a return to its investments even on good years; by 1929 over 67% of its loans were in arrears, only to be killed off by additional bad debts during the depression[104].

Thus the ad-hoc efforts by Storrs to alleviate the farming crisis were ineffective; efforts to correct them during the period 1936-1940 proved expensive for the government. The agricultural bank was liquidated in 1939 at the government's expense, while substantial government expenditure was spent at restructuring the co-operative sector. By 1938 the co-operative industry was placed on a very sound basis: a department of co-operation was established in order for the societies to be regulated, while a co-operative central bank was established (as a joint venture by the government of Cyprus and Barclays (D.C.O)) in order to operate as a lender of last resort for credit societies in trouble[105].

The lack of focused government intervention in agriculture was thus a great handicap for the British colonies dependent on agricultural production[106]. Although Storrs government wanted to improve the agricultural production, it was ineffective in planning a coherent response leading to substantial expenditure for limited results: agricultural projects were half-hearted and did not take account the opinion of Cypriot legislators, and as a result they ended up costing more than planned. This was the opinion of an assistant undersecretary of the colonial office, who argued that "Agriculture, Forestry and Public Health, though they received somewhat spasmodic and amateurish attention, were never, I think, regarded as being within the main field of government activity"[107]. Even if the colonial administration did not want to intervene in the economy directly, the government could have alleviated the rural crisis through a combination of substantial increase of tariff protection and by providing incentives, in terms of water rights, tax waivers and credit, to induce the conversion of cereal land into citrus gardens. But to do so would have led to a level of micro-management of the island's affairs and in co-operation with Cypriot notaries that would have been at that time unprecedented in colonial affairs.

[103] Angastinotis, *Ο Συνεργατισμός…*(1965), pp.64-65
[104] Lanitis, *Rural indebtednes …*(1944; revised 1992) p.45
[105]. Angastinotis, *Ο Συνεργατισμός…*(1965) pp.62-63; Lanitis, *Rural indebtedness and …*(1944; revised 1992) p.106
[106] Example of India: Rothermund. *The Global Impact of the Great Depression* (1996) pp.95-96
[107] As cited by Georghallides, *Cyprus and the Governorship…* (1985) p.181

In contrast the Greek government, having to consider some of the demands placed by its rural majority, successfully promoted crop diversification by shouldering the burden of land reform and of the resettlement of Asia Minor refugees. In addition the government of Greece allowed for a revival of the rural economy during the depression by announcing a debt moratorium on what it was owed by farmers for five years and by suspending taxation on most[108]. These acts were known to by Greek-Cypriots legislators who wanted the colonial government to follow similar policies. However the government ignored the Cypriot legislative council as they were under not under similar pressure to Greece to accommodate the inhabitants' wishes. The colonial authorities did not feel the pressure for action as forcefully as in other independent states and thus they were less willing to intervene in the rural economy.

As protectionism policy for Cyprus was effectively set in London due to the need of substantial imperial preference discounts, the usually interventionist governor Sir Storrs tried to alleviate the farming crisis by expanding credit to farmers through the co-operative credit societies and the agricultural bank. However, poor planning led to an expensive meltdown of the agricultural bank, which led to substantial government funds being wasted. It does not mean that the colonial government could have had saved the Cypriot farmer from all the effects of the twin calamities of the great depression and drought, but by listening to the Cypriot legislators the government could have partially alleviated the farming crisis through the implementation of a coherent recovery scheme.

Thus a substantial amount of money was dribbled away to small improvements in agriculture, whose subsequent failure necessitated costly restructuring. Although the government did provide loans through the rural co-operatives and a small agricultural bank, these were efforts to placate local complaints, and thus credit was parcelled out in small amounts to as many farmers as possible rather than provide a solution to the many problems of the farmers. Tackling the issue as assertively as independent Southern European countries would have been a better option, but such interventionist measures were radical departures from the prevalent colonial mentality of the role of the state in an economy. Although more comparative research is needed, it seems that rural colonies such as Cyprus were disadvantaged during the interwar period, as British colonial governments did not feel enough pressure to solve agricultural problems as in independent states.

[108] Mazower, *Greece and the Interwar*... (1991) p.133

In the end it took the huge stimulus of the Second World War and the setting up of the Debt Settlement Board to kick start the rural economy of Cyprus, as explained below[109]. The War introduced higher prices and a huge demand for agricultural products, being placed openly in neighbouring markets through centralised allocation system (the Middle East Supply Centre) established by the British. The Debt Settlement Board led to the elimination of the rural debt, unfreezing the local rural credit market and enabling investment to flow through the restructured co-operative sector[110].

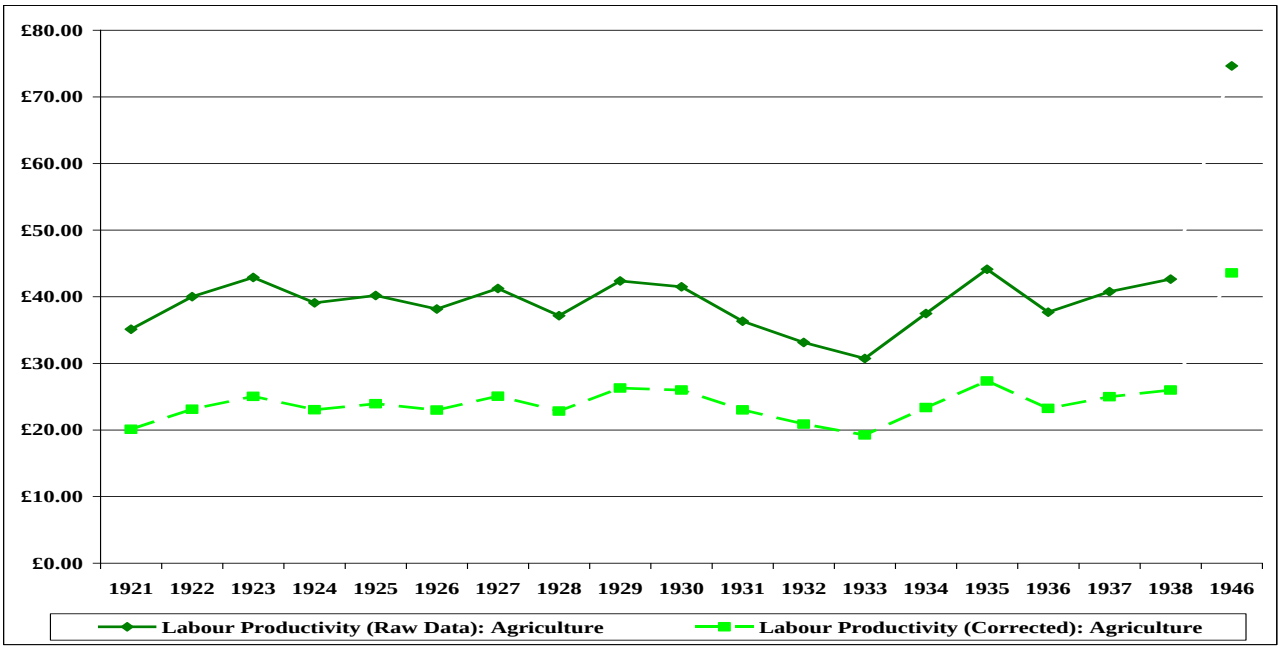
Labour productivity in agriculture

One would ideally estimate the hours worked on agricultural activities in order to estimate labour productivity, since agriculture is a sector with significant part-time activity. However since an unknown proportion of the population employed only worked part time in agriculture, labour productivity based on those who enumerated it as a primary occupation was deemed more appropriate[111]. Labour productivity was estimated by dividing the sector output by the number of persons in employment in that sector[112]. This only included persons who stated agricultural employment as their first activity; thus it is not the best estimate of labour productivity, which would necessitate estimating also the persons who worked on the land as a secondary activity. As mentioned in chapter 2 there was underestimation of the number of women occupied in agriculture, but the number of men is considered accurate[113]. Therefore the number of women employed in agriculture was corrected by raising the participation rate for women to be similar to that of men in each census.

Employment in agriculture was given only in the censuses of 1921, 1931 and 1946 (1948 for Malta); the figures for the intervening years were log-linearly interpolated. The output per worker in agriculture for Malta and Cyprus is shown in figure 4.6 and 4.7 respectively. What is interesting is that the results of Malta and Cyprus are similar to the results of Egypt; despite a poor growth in value added terms, productivity was increasing at a faster pace as the number of farmers employed in farming declined in relative or absolute terms[114].

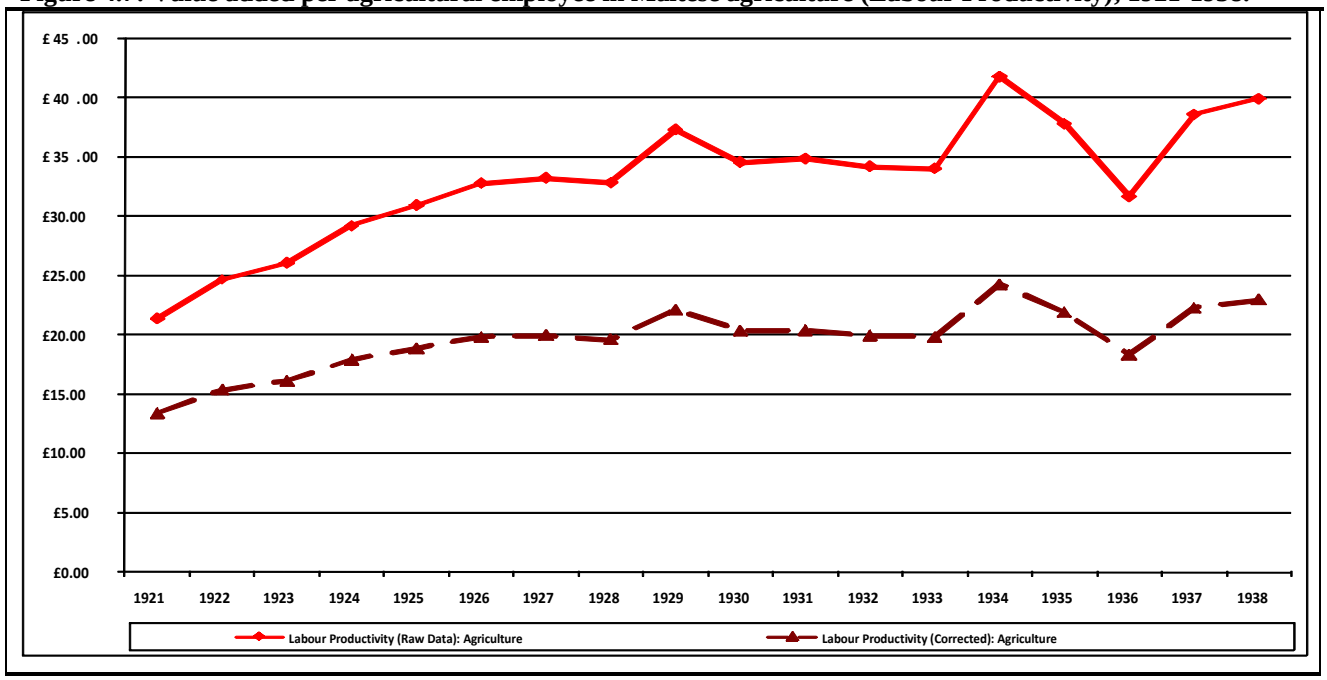
[109] Cyprus, *Report on the Activities of the Debt…*, (1945) p.2
[110] Ibid. p.3
[111] Antoniades, A., *et al, Part-time Farming in Cyprus*, (2001), "Introduction".
[112] OECD, *Measuring Productivity: Measurement of Aggregate and Industry Level Productivity Growth* (Paris: OECD, 2001); the estimates are for single factor productivity measurements.
[113] See: Chapter 2, pp.36-39, Section "Data sources, collection methods and data quality"
[114] Brown, *The Economies of Africa...* (1989) p.139

Figure 4.6: Value added per agricultural employee in Cypriot agriculture (Labour Productivity), 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Table 4.1; Hart-Davis, *Census…1921* (1922); Hart-Davis, *Census…1931* (1932); Percival, *Census...1946* (1947).

Figure 4.7: Value added per agricultural employee in Maltese agriculture (Labour Productivity), 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Table 4.1; Malta, *Census…1921* (1922); Malta, *Census...1931*(1932); Malta, *Eleventh Census …1948* (1949).

Comparing figures 4.6 with 4.7 indicates that productivity per worker in Cyprus was higher than in Malta at the start of the period. However, Maltese productivity was growing much faster than Cypriot agricultural productivity. Labour productivity was increasing in Cyprus and Malta during the period 1921-1938, at 1.53% and 3.25% respectively.

Part of the rapid growth in labour productivity in Malta is due to the very low productivity base of the industry and the relative and absolute fall of people employed in farming, enabling rapid catch up in agricultural productivity. However, another reason for the growth is likely to be the increase of part-time farming, which might not be fully captured despite the correction made to accommodate the unremunerated female employment in the sector. The productivity growth of Cyprus was low and more akin to pre-First World War economies, since there was a marked acceleration in European labour productivity in the interwar period that seemed to bypass Cyprus[115].

It is possible to estimate the output of Cypriot agriculture in 1946 on the basis of an estimate provided in the Cyprus census for that year, and by using a Fisher price index to adjust it to 1938 constant prices. The results are presented in table 4.7 below. By 1946 agriculture was in much better shape: the debt crisis was resolved, the government was investing in irrigation projects, while prices for Cypriot products such as wine, fruit and citrus were at an all-time high due to the demand during the war. This allowed for a rapid conversion of land to more productive uses, while work for the army led to a reduction of rural underemployment and thus boosted the industry's productivity. Thus the "green-revolution" of Cypriot agriculture took place towards the end of the Second World War.

Table 4.7: Cypriot agricultural output before and after the Second World War

	Per Capita Value Added of Agriculture	Output of Agriculture
1938	7.3	2,851,240
1946	10.42	4,688,539

Note: In constant 1938, PPP, pounds sterling. Source: Percival, 1947 pp.87-88, Appendix B (PPP adjusted).

Table 4.7 indicates that the agricultural sector grew substantially during the war. By 1944 the expansion of agriculture was already underway; by 1946 value added in agriculture increased both in aggregate and in per capita terms[116]. The rapid expansion of the agricultural sector was directly related to the needs of the African front, which created a huge demand for agricultural products[117]. Due to the centralised planning of the front by the Middle East Supply Centre, Cyprus was able to supply agricultural products to markets that were previously protected by heavy tariff barriers[118]. Like other colonies the farming crisis in Cyprus was only dispelled through the outbreak of war[119].

[115] Feinstein, Temin, & Toniolo, *The European Economy…* (1997) p.11; Federico, *Feeding the World…* (2005), p.73; Cypriot productivity is more akin to the Austrian agricultural productivity growth before the First World War: Schulze, "Origins of Catch-up Failure…" (2007) p.196
[116] National Archive, Nicosia. File: Cyprus, *Statistical (Blue) Book 1944* (Unpublished); File: V5/56
[117] Wilmington, *The Middle East Supply Centre* (1971) p.21
[118] Ibid. p.4
[119] Rothermund. *The Global Impact of the Great Depression* (1996) p.133

Thus the war acted as a great stimulus to Cypriot agriculture, and paved the way for the post-war expansion of key industries, such as animal products, grapes, citrus fruits and potatoes.

Chapter 5: Mining and Quarrying

"Mavrovouni and Skouriotissa, mountains intractable, naked.
Cursed like Prometheus; like him doomed to have their innards taken out,
For daring to give light to man, for daring to give copper, so many eons ago"[1].

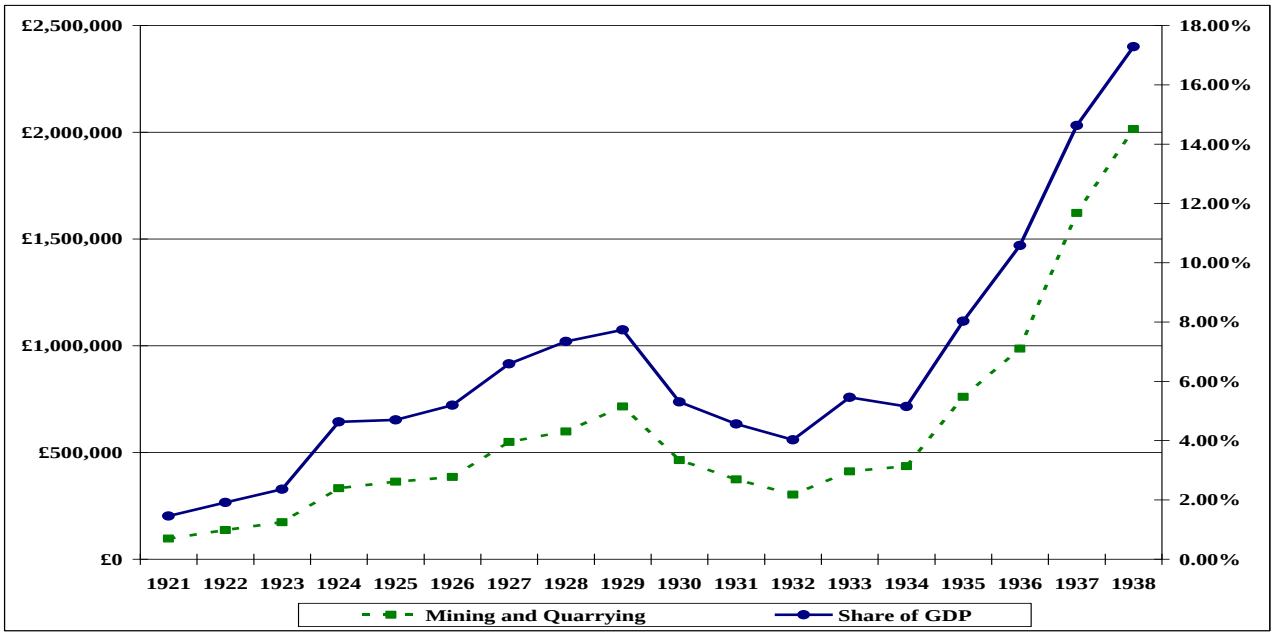
This chapter evaluates the effect of the mining and quarrying industries on the islands' economies. Although they was not a lot of information about small sections of the industry, data for the major of mining and quarrying industries was plentiful and thus the estimates are deemed reliable. The fortunes of the two islands in terms of natural mineral resources were dissimilar. Cyprus has been associated with copper since the Bronze Age: the mines of Skouriotissa and Lymni were also in operation during classical times[2]. The island's copper sulphate industry was reinvigorated by significant investment in the mining industry, which was the driving force of the island's post-depression recovery. In contrast, Malta has no natural mineral resources, but has an extensive supply of limestone[3]. As a result the sector remained very small in terms of output and GDP growth.

Mining and quarrying output

The relative failure of the Cypriot agricultural sector in the 1930s, as analysed in chapter 4, is placed in sharp contrast to the dramatic growth of mining, particularly of the copper mining industry. The mining sector employed far fewer workers than the agricultural sector but grew by leaps and bounds from the mid-1930s onwards. In 1921 the sector was small, based mostly on an asbestos mine which was fully operational only in the summer. The discovery of new copper sulphate resulted in the rapid explosion of output; by 1938 the mining sector was providing 44% of the primary sector's value added. It is clear that the mining sector transformed itself from an insignificant part of the economy in 1921 to the main driver of growth in the post-depression recovery. In terms of size, agriculture was still the most important sector in Cyprus. However, in terms of growth and increasing productivity, this sector was the important sector of the Cypriot economy in the 1930s. Figure 5.1 captures the dramatic rise of mining in Cyprus from an insignificant part of the economy to the main driver of growth in just seventeen years. Value added expanded by a factor of 20.8, implying a per annum average growth rate of 19.6% during 1921–1938.

[1] Extract from the poem "Τα Μεταλλεία" [The Mines] by Kostas Montis, as narrated in *Μεταλλωρύχων Μνήμες* [Miners' Memories], DVD, Pancyprian Labour Federation, Nicosia, 2007.
[2] Baer, L.M., *The Mineral Resources and Mining Industry of Cyprus* (Nicosia: GPO, 1963), p.1
[3] The island of Malta has large supplies of globigerina and coralline limestone used in construction both in Malta as well as exported aboard.

Figure 5.1: Value added of mining and quarrying, Cyprus, 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted).

The industry's growth was not linear: the fall in mineral prices during the depression checked the growth achieved in the latter half of the 1920s as mineral prices fell faster than all other prices: output remained at anaemic levels until 1934[4]. The majority of interwar growth took place from 1934 onwards, since Cypriot copper ore proved essential to German re-armament[5]. Cypriot ore provided three crucial raw materials in which Germany was not self-sufficient: iron, copper and sulphur. Before 1934, Germany it imported most of its ore from the biggest European producer of copper sulphate, the Spanish mines of the Rio Tinto Company[6]. Yet Rio Tinto was facing an increasingly difficult situation in Spain, with constant labour unrest and threats of violence in the early 1930s: as a result Riot Tinto limited the investment in its Spanish mines which led to a reduction of their output, thus created a large supply-gap in the European copper sulphate market[7].

Asbestos mining also increased its output during the 1920s, but failed to keep up with the rapid growth of the copper sulphate mines in the 1930s. Quarrying of stone, terra umbra (a pigment used in dyeing) and gypsum was a significant part of output in 1921, constituting 39.9% of the industry's value added. Yet, its importance declined as output growth was low at a time when copper mining output increased dramatically, reducing quarrying to just 1.7% of the industry's value added in 1938.

[4] Grilli & Yang "Primary Commodity Prices…", (1988), Appendix 1.
[5] Christodoulou, *Inside the Cyprus Miracle…*(1992), p.70.
[6] Harvey, C.E., *The Rio Tinto Company: An Economic History of a Leading International Mining Concern 1873–1954* (Penzance: Alison Hodge, 1981) p.273
[7] Ibid. p.259, 261

The growth of the mining sector in Cyprus was essentially based on the exploitation of large copper deposits, situated in the west of the island. The discovery and subsequent exploitation of copper ores on the island was intractably linked to the rise and development of the Cyprus Mines Corporation (CMC), an American free-standing company based in California, whose sole concern was the mines in Cyprus. The extraction of copper on an industrial scale is linked to the growth of the CMC, with the company becoming a catalyst for the economic, technological and social transformation of Cyprus[8].

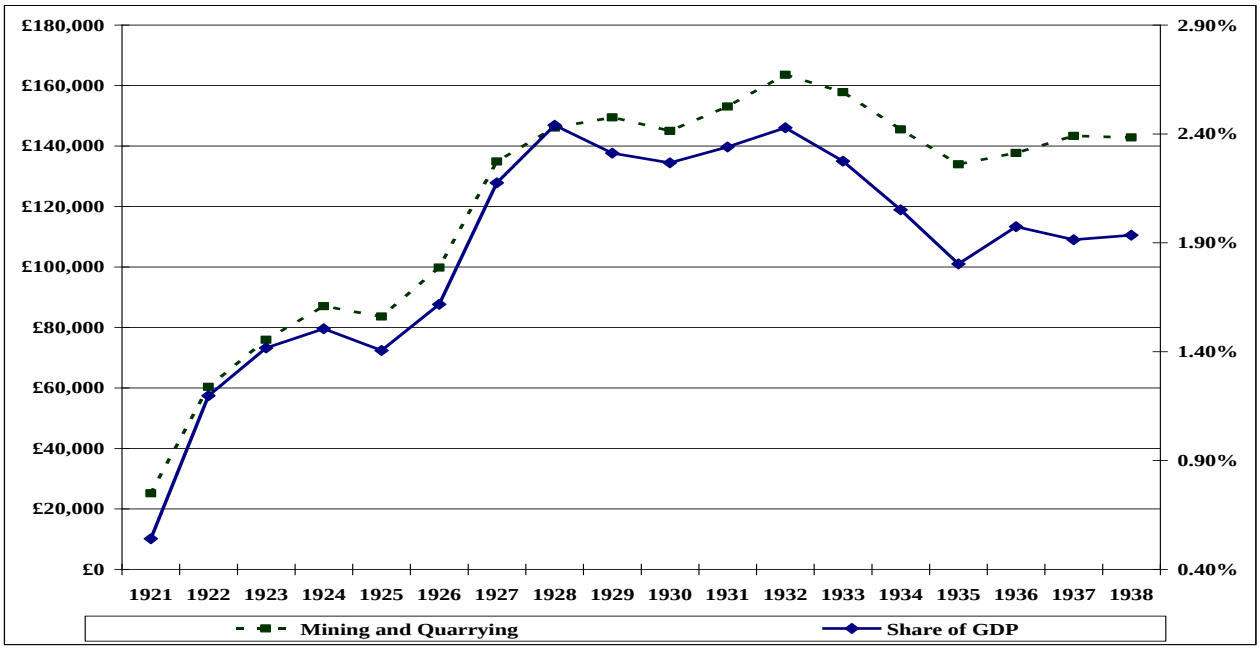
Before the company started operations the excavation of copper ore had virtually ended: there was a feeble attempt to restart the ancient Lymni mine in the 1880s but with no success. Charles Godfrey Gunther discovered copper ore in Skouriotissa in 1914 and established the CMC in 1916 with the support of Californian mining entrepreneurs. Skouriotissa was the site of an ancient mine, with an estimated eight million tons of cupreous, non-arsenical, sulphate ore[9].

The value added of quarrying in Malta is shown in figure 5.2. Most of the output went to provide materials for the domestic construction industry, and a limited amount of Globigerina limestone was exported. There was some salt extraction in Gozo, but it remained an insignificant part of output. The sector was little affected by international prices as the output was used for domestic construction. As a result the quarrying sector output followed the business cycles of the construction industry: a steady increase in the second half of the 1920s, followed by a very rapid expansion in the second half of the 1930s. The quarrying sector increased by a factor of 5.6 in the period 1921–1938, achieving an annual average growth rate of 10.8%. Thus Malta managed to substantially increase its quarrying output. However, the quarrying sector remained a relatively small part of GDP because of its low starting base in 1921.

Almost nothing is known about the quarrying sector of Malta, and thus the analysis of the Maltese estimates is quite limited. It seems that quarrying was not mechanised, and took place in small quarries, each employing very few people. Limestone is plentiful and scattered throughout Malta, and therefore there was no need for the large centralised companies which characterised the mining sector of Cyprus. Thus the industry achieved substantial output growth in both islands, but only in Cyprus did it grow to a sufficient size to counterbalance the stagnation of the agricultural sector.

[8] Christodoulou, *Inside the Cyprus Miracle…*(1992), p.70.
[9] Dr G. Konstantinou, as interviewed in *Μεταλλωρύχων Μνήμες* [Miners' Memories], DVD, 2007; Lavender, *The Story of…*(1962), p.244

Figure 5.2: Value added of quarrying, Malta, 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Appendix C.

The comparative value added and value added per capita is shown in tables 5.1 and 5.2. Despite the substantial output growth in the quarrying sector in Malta, the increase in output of mining in Cyprus meant that the sector's share of per capita GDP pulled ahead of Malta's.

Table 5.1: Value added of mining and quarrying, Cyprus and Malta, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	25,161	96,720	1930	144,962	463,969
1922	60,356	136,479	1931	153,038	373,834
1923	75,896	173,383	1932	163,547	302,129
1924	87,003	332,160	1933	157,790	411,393
1925	83,564	363,220	1934	145,472	435,884
1926	99,791	385,456	1935	133,906	760,263
1927	134,861	548,898	1936	137,655	986,593
1928	146,053	598,150	1937	143,304	1,621,523
1929	149,474	714,889	1938	142,834	2,014,430

Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted); Appendix C.

Table 5.2: Per capita value added of mining and quarrying, Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Cyprus	Malta
1921	0.31	0.12	1930	1.35	0.61
1922	0.43	0.28	1931	1.07	0.63
1923	0.55	0.35	1932	0.85	0.67
1924	1.03	0.39	1933	1.14	0.64
1925	1.12	0.37	1934	1.19	0.58
1926	1.17	0.44	1935	2.04	0.52
1927	1.65	0.59	1936	2.60	0.53
1928	1.78	0.63	1937	4.20	0.55
1929	2.10	0.63	1938	5.13	0.54

Note: In constant 1938, PPP, pounds sterling. Source: Table 5.1, Table 3.2

The growth of mining output in Cyprus could have been more rapid in the early 1920s, but a lack of funding led to a shortage of capital investment and to the slow development of the ore findings by the CMC. Excavation, transport, refining and loading were done by hand, and it was not until 1924 that candles were replaced by carbide lamps in the underground tunnels[10]. Most ore was exported with minimal processing, and thus the company failed to garner more of the value added chain of copper production. This held back the development of Skouriotissa mine until 1924. By the late 1920s the CMC managed to successfully increase output by undercutting the price of the Pyrites Producers Association cartel, but had reached a ceiling on what it could sell without direct access to the large German chemical market, which was effectively controlled by the Pyrites Producers Association[11].

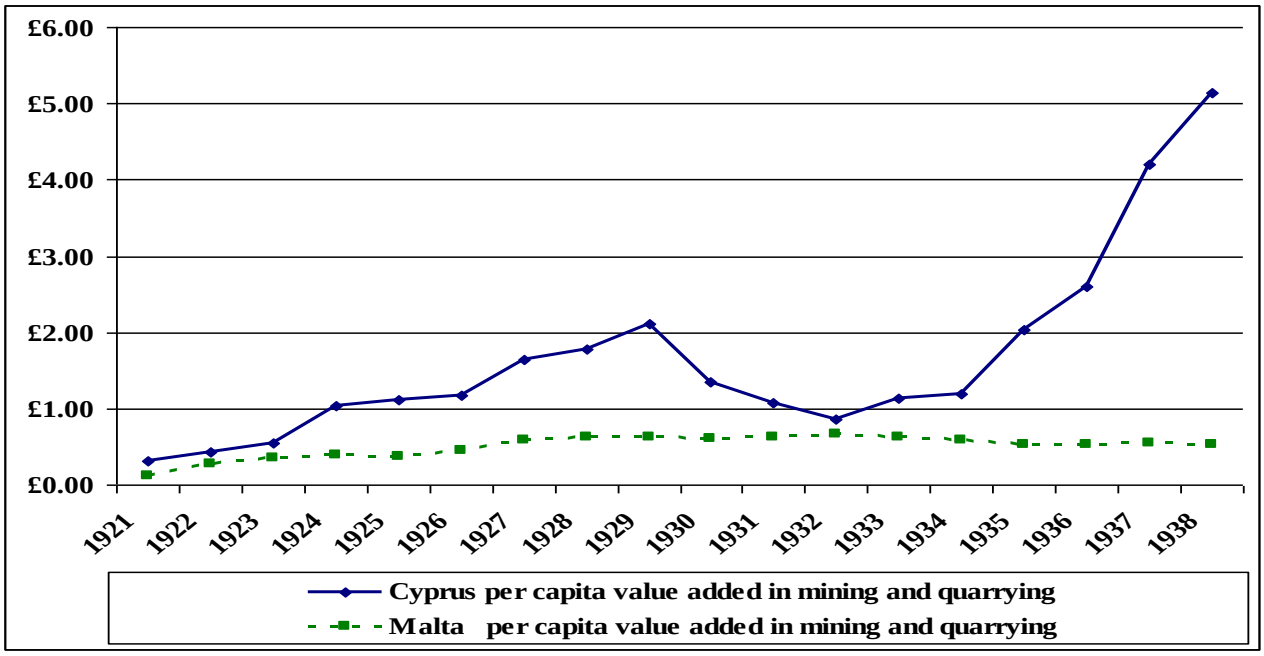
The lack of any heavy industry in Cyprus meant that the firm had to import machinery and then set up workshops to maintain even the most basic equipment. The CMC imported the first oxyacetylene torch, the first x-ray machine, as the local market could not provide any technological products. Lavender argues that the company increased the technological capacity of the island by getting Cypriots acquainted with new machinery that led to local people setting up their own workshops to repair and reproduce machinery imported by the company[12].

The rapid increase in mining output led to a rapid re-organisation of society within a very short period of time, especially in terms of labour relations. The CMC was the largest industrial employer in Cyprus: it created its first proletariat who organized themselves in coherent groups. This was partly due to the fact that the company outsourced its labour, housing and supplies to contractors, leading to mass profiteering. The workers, with the aid of the emerging communist movement, began organising the first strikes over pay and conditions, the first affecting Mavrovouni in 1936[13].

[10] Lavender, *The Story of…*(1962), p.193, p.195
[11] Harvey, *The Rio Tinto Company* (1981) p.208. In 1936 alone, the Rio Tinto mine in Spain had twelve major strikes between February and July: p.265-266
[12] Christodoulou, *Inside the Cyprus Miracle…*(1992) p.80
[13] Ibid, p.82

Unionisation was resisted by the company until 1939 but the miners union became pivotal in the growth of the pan-Cyprian federation of labour (PEO) and the communist party of Cyprus, AKEL, with important political consequences in the history of Cyprus. This was not unusual; the same process took place in Spain as strikes against the Rio Tinto Company were pivotal in the development of the Spanish labour movement[14]. Thus the CMC was a catalyst for the formation of a strong communist movement in Cyprus, with the strike against the CMC in 1948 initiated a new era in labour and political relations on the island[15].

Figure 5.3: Per capita value added of mining and quarrying, Malta and Cyprus, 1921-1938.



Note: In constant 1938, PPP, pounds sterling. Source: Table 5.2.

The rapid growth of the period 1934-1938 was due to the stockpiling of extracted ore during the depression, significant capital investment increasing the extracted output, the discovery of the Mavrovouni mine and high value metallic ores of silver and gold. Mavrovouni had over seventeen million tons of copper and other precious ores and its discovery was deemed so significant that the Rio Tinto Company attempted to purchase a majority share in the CMC in order to restrict its output[16]. Although the buyout did not go ahead, Rio Tinto agreed to allow CMC's copper sulphate to be marketed through the European Pyrites Corporation (EPC), an organisation that was the main purchasing agent for German chemical companies, thus released the CMC from marketing

[14] Harvey, *The Rio Tinto Company* (1981) p.177
[15] Christodoulou, *Inside the Cyprus Miracle…*(1992) pp.83-84
[16] Harvey, *The Rio Tinto Company* (1981) p.209

constraints[17]. In order to be accepted by the EPC, the CMC agreed in 1928 to limit its output to below 225,000 tons, but broke its promise in 1928, 1937 and 1938[18].

The discovery of Mavrovouni transformed the CMC as a main player in the global copper market. The ore was high in copper content, and for technical reasons it was ideally and uniquely suited to the German industry; the only smelter in Europe capable of treating the company's copper concentrate was in Hamburg[19]. Thus the CMC was able to capitalise on the changing demand for copper sulphate: previously low grade copper sulphate was used mainly in the production of acid, and the copper content was seen as an auxiliary material. The introduction of the brimstone processes in acid manufacture meant that the CMC's copper sulphate, which contained a high concentration of copper and iron and had no other metal impurities, became much more attractive to copper and iron manufacturers[20]. Mavrovouni began intensive production in 1929 and reached full capacity in 1934. Unlike the slow growth of Skouriotissa, the discovery of Mavrovouni led to a massive investment programme which ensured than the new mine would rapidly increase its production. The company invested in a modern processing plant at Xeros, which was completed in 1934. The plant enabled the CMC to sell purified copper concentrate as well as other metal precipitates, thus greatly increasing the value of its output[21]. The processing plant completed served both Skouriotissa and Mavrovouni through a private railway that linked the mines to the government railway and to the new jetty at Karavostasi.

The company's rapid growth was further aided after discovering complex deposits containing silver and gold around Mavrovouni: prospecting unearthed small deposits of gold and silver near Apliki, Agrokipia, Kokinopezoula, Mathiatis and Troulli. The export of gold and silver from 1934 to 1938 increased output due to the high prevailing price of gold; thus the rapid growth after the great depression was a combination of new ores and significant investment, brought to full capacity by the vociferous demand for copper by Germany. Following the success of the CMC, other companies backed by foreign interests were also established in Cyprus: the most successful being the Hellenic Mining Company, which extracted copper, silver and gold at Kalavassos and Mitsero. From 1929 to 1938 the number of active mines doubled, but the CMC remained by far the largest in terms of output and employment.

[17] Ibid. p.210
[18] Source: Cyprus, *Statistical (Blue) Books* of 1928, 1937 and 1938. The volume of exports of copper sulphate mined by the CMC was above the limit agreed with Rio Tinto.
[19] Lavender, *The Story of…*(1962), pp.265-266
[20] Harvey, *The Rio Tinto Company* (1981) p.167, p.210
[21] Lavender, *The Story of…*(1962), pp.265-266

Table 5.3: Yearly growth of mining and quarrying, Cyprus and Malta, 1921-1938.

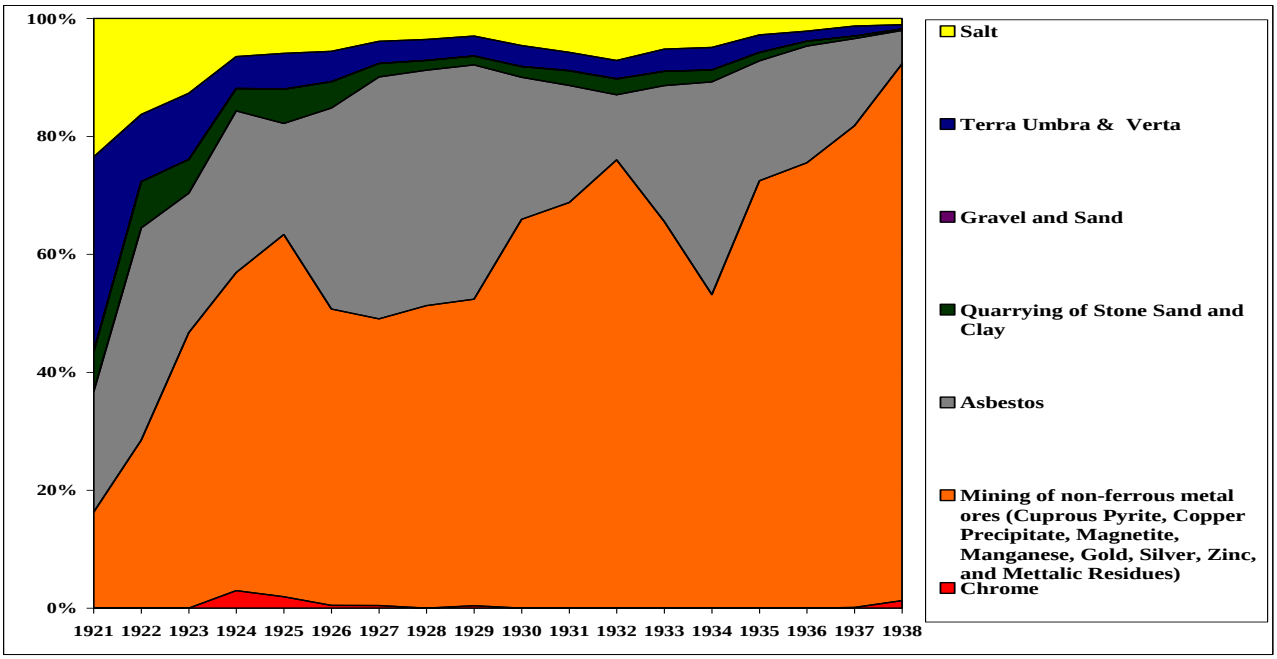
Year	Malta		Cyprus	
	Value added (%)	Per Capita (%)	Value added (%)	Per Capita (%)
1921–1922	139.9	136.8	41.1	39.5
1922–1923	25.7	24.1	27.0	25.6
1923–1924	14.6	13.2	91.6	89.4
1924–1925	-4.0	-5.2	9.4	8.1
1925–1926	19.4	17.9	6.1	4.9
1926–1927	35.1	33.4	42.4	40.8
1927–1928	8.3	6.9	9.0	7.7
1928–1929	2.3	1.0	19.5	18.2
1929–1930	-3.0	-4.3	-35.1	-35.8
1930–1931	5.6	4.2	-19.4	-20.3
1931–1932	6.9	5.4	-19.2	-20.6
1932–1933	-3.5	-4.9	36.2	33.8
1933–1934	-7.8	-9.1	6.0	4.2
1934–1935	-8.0	-9.2	74.4	71.5
1935 –1936	2.8	1.4	29.8	27.6
1936–1937	4.1	2.7	64.4	61.6
1937–1938	-0.3	-1.7	24.2	22.1
1921–1938	10.8	9.3	19.6	17.9
1921–1929	21.5	19.9	19.0	17.7
1930–1938	-0.2	-1.6	20.1	18.2
GDP Peak to Peak (1925-1937)	4.6	3.2	13.3	11.7

Note: In constant 1938, PPP, pounds sterling. Source: Table 5.1.

The rapid increase of the relative importance of copper over all other mining and quarrying products in Cyprus is shown in figure 5.4. The copper sulphate mines also produced other metallic ores that were in the same ore body, such as iron, magnetite, manganese, gold, silver and zinc. The relative importance of the copper mines rose from 16.3% in 1921 to 87.2% in 1938. The output of asbestos was much more volatile, expanding rapidly in absolute and relative terms but suffering a dramatic drop in output in 1932, as the company was in financial distress. Despite the restructuring of the company and the reduction of asbestos royalties paid to the government, the company recovered its former output levels. The excavation of terra umbra and terra verta, natural pigments used in dyeing, reached a peak in output in 1921 and dramatically declined afterwards, with a sudden increase in 1937[22]. Almost nothing is known about this industry in this period. The amount of quarrying stone produced increased until 1925, when it fell back and remained steady at the levels of 1922. Again not much is known about this industry other than they were over 200 small scale quarries operating in Cyprus[23].

[22] Baer, *The Mineral Resources…* (Nicosia), p.130
[23] Oakden, *Report on the Finances* (1935), p.22

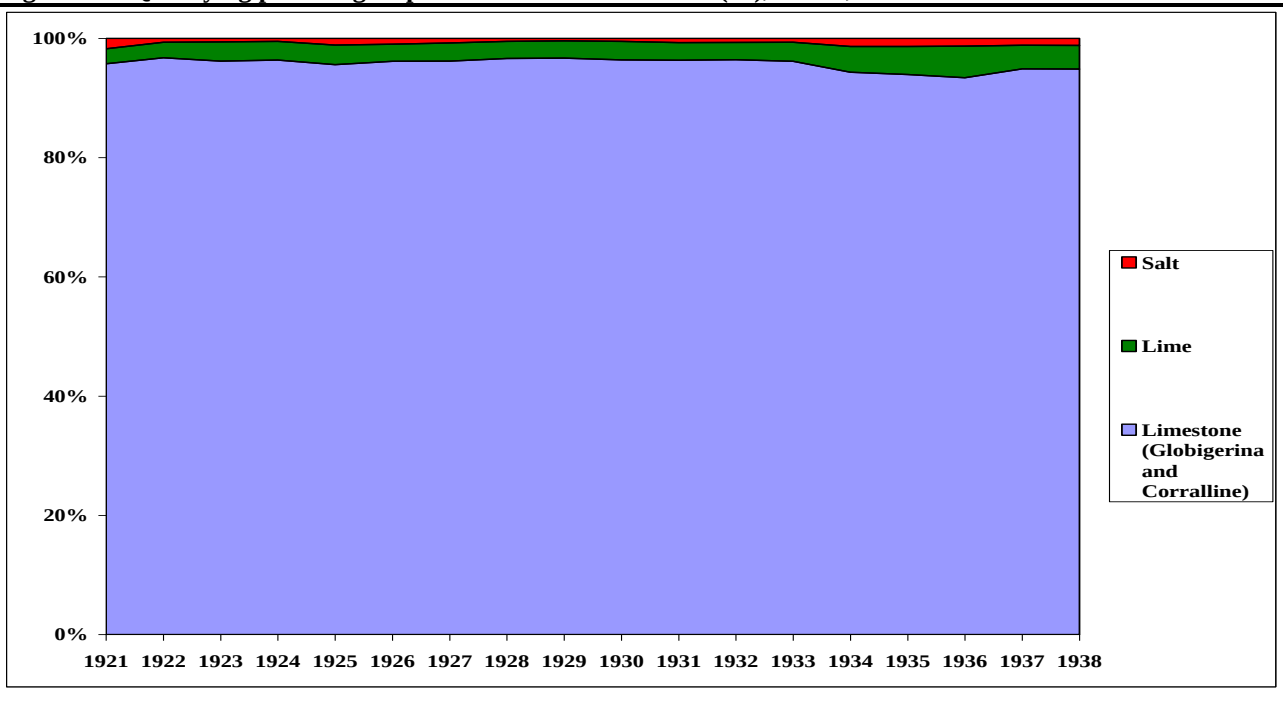
Figure 5.4: Mining and quarrying per sub-group as share of value added (%), Cyprus, 1921-1938.



Source: Appendix B.

The importance of limestone excavation in Malta has already been mentioned and is shown in figure 5.5. The output of lime and limestone seemed to follow similar rates of expansion and contraction with the construction industry, with a correlation coefficient of 0.81, suggesting that they were extracted as domestic market construction materials.

Figure 5.5: Quarrying per sub-group as a share of value added (%), Malta, 1921–1938.



Source: Appendix C.

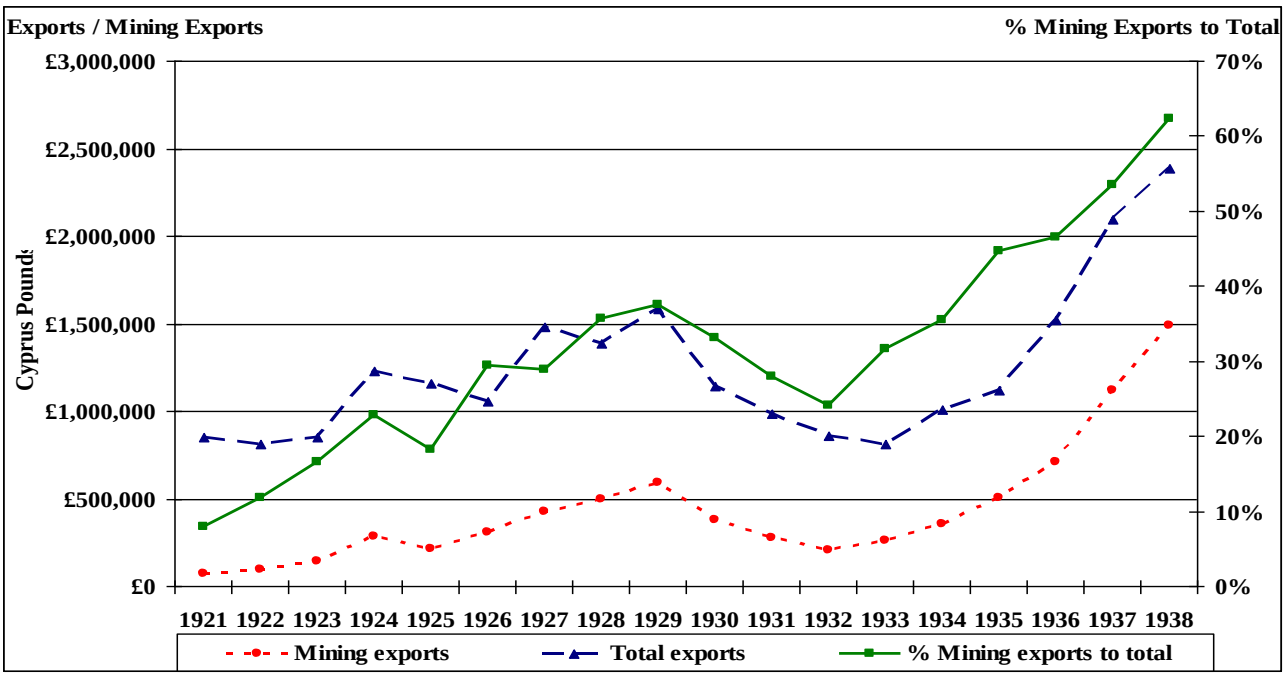
There was very little domestic consumption of mining output in Cyprus thus the ore was exported providing foreign exchange at a time when the value of traditional agricultural exports was declining. Mining exports increased from 7.7% of total exports in 1921 to 62.3% in 1938, increasing exports from the island despite the decline of agricultural exports. Its ability to procure foreign exchange was important in preventing a reduction of money supply in Cyprus. The Cypriot pound was tied at par to sterling through a sterling currency board[24]. This meant that in the event of a trade deficit the government would withdraw domestic currency from circulation, since the currency board required one pound sterling to be deposited in London for every Cypriot pound issued. The net exports of the mining companies eliminated the possibility of a large deficit becoming a drain to the Cypriot money supply[25].

Thus the development of the mining sector had real tangible benefits for Cypriots in terms of employment, capital investment and in securing foreign exchange. Some farmers who lost their land because of their debts to money lenders became miners allowing the poor villagers on the Troodos mountain range to minimise the reduction of their income from the sustained fall in agricultural prices. In the villages of the Pitsilia area of the Troodos range, such as Agros, farmers delegated the farming work to their children during the summer asbestos mining season and worked in the mines in order to support the family until the late summer harvest[26].

In terms of employment, the CMC and the Cyprus Asbestos Corporation (CAC) were the largest employers on the island. Data on employment prior to the establishment of the inspectorate of mines in 1926 are not robust, but the figures are more reliable from 1926 onwards. The proportion of total wages to total value added was estimated, by multiplying the average number of daily workers in each mine by the daily wage, and then multiplying the outcome by the total days on which the mine was active. The total wage was then divided by the value added at current prices in order to evaluate how much of the value added was spent on wages, and how much was either capital investment or profits. The results shown in figure 5.7 indicate that the company managed to maintain a relatively constant share of revenue spent on wages, despite rapidly increasing production, thus increasing its absolute profits.

[24] Phylaktis, *The Banking System of Cyprus* (1995), p.43
[25] The mining companies also expropriated profits abroad, thus the positive contribution to balance of payments was positive but less than the total mining goods exported.
[26] Interview with Georgios Kyprianou, former secretary of the Agros village co-operative in the 1930s, 18 July 2008

Figure 5.6: Mining exports as a share to total exports, Cyprus, 1921-1938.



Note: In current Cyprus pounds. Source: Cyprus, *Statistical (Blue) Book,* (1921–1938)

Despite the industry's impressive increase in output there is debate on the contribution in terms of national income. Christodoulou argues that the sector had a limited effect, "since mining, being practised as an enclave economy, had no multiplier effect of any significance on the island's wider economic activity"[27]. In contrast, the British colonial authorities were very positive about the mining companies, considering Mavrovouni and Skouriotissa as the "the island's most valuable assets… being exploited in the most efficient way possible by a first-class organisation"[28]. Christodoulou is right to point out that the demand multiplier was lower than suggested by the value added because of extensive expatriation of profits deflating the value added in GNP terms.

It was not possible to calculate the profit of mining companies, but there is enough information on the activities of the companies in the annual reports of the government inspectorate of mines and labour to place limits on the possible magnitude of such profits. The department was established in 1926, and contains information on tax, wage and capital expenditure, allowing for an estimation of potential profit as a residual.

The mining companies spent money on capital goods, purchasing intermediate consumption goods, paying wages, and on taxes. The cumulative value added in current prices for the period from 1926 to 1938 was £7,320,356 Cyprus pounds. As seen in figure 5.7, the cumulative sum of wages of

[27] Christodoulou, *Inside the Cyprus Miracle…*(1992) pp.77-78
[28] Oakden, *Report on the Finances* (1935) p.21

Cypriots in the sector for the same period was £2,545,942. Georghalides and Oakden provide estimates of imported capital expenditure by the CMC totalling £750,000 Cyprus pounds[29]. Since the CMC constituted 80% of the market in terms of output and employment, an additional 20% was assumed to be invested in capital by the remaining companies.

The construction of buildings was recorded for the years 1930–1932 in the annual reports of the inspectorate of mines and labour. The average expenditure in building construction for the three year period is assumed to have been constant for the years with no information. Additional capital expenditure was necessary to open Mavrovouni and on that basis an additional 20% was assumed to have been invested for the Hellenic Mining Company to open the much smaller Kalavassos mine. The total amount invested for the years 1926–1938 was £1,433,345 Cyprus pounds. The cumulative royalty payments to the government were £177,345. Thus by subtracting the total wage, total investment and total taxes on production from the cumulative value added, the potential profit of the foreign mining firms for the period 1926–1938 was estimated as £3,163,724 or 43.2% of the total value added.

This estimate errs on the side of caution since the other foreign mining companies did not invest as much in capital as the CMC, and there may be an overestimation on the level of investment, biasing the result against a large residual. The results seem to indicate that the value added sent abroad as profit must have been significant. Thus, even if the growth of output was helpful to Cypriots in GDP terms, it was less helpful in GNP terms thus, limiting the multiplier effect of the great mining boom.

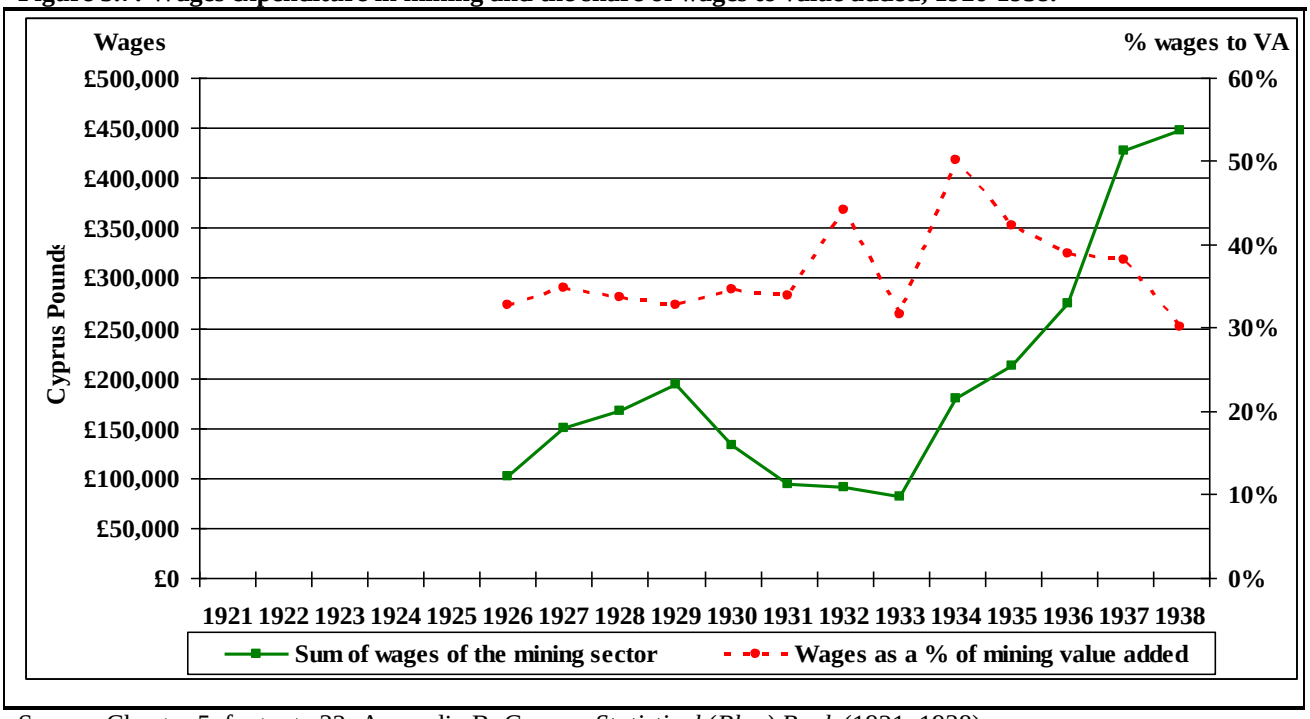
Figure 5.7 also indicates that the mining companies, like other large foreign companies in British colonies, were quite successful in pushing the burden of the depression on its employees by containing the share of total wages to total value added[30]. Figure 5.8 shows that from 1926 to 1930 labour productivity increased along with employment. Figure 5.1 indicates that output was increasing until 1929, while figure 5.7 shows that the share of wages to value added remained constant. This means that the mining companies were successful in reducing the wages of the miners, even though the miners were becoming increasingly more productive. The mass underemployment in rural Cyprus, as analysed in chapter 4, helped to keep the wages of the miners down throughout the interwar period.

[29] Georghallides, *Cyprus and the Governorship…*(1985) p.120, Oakden, *Report on the Finances* (1935), p.21
[30] Rothermund, *The Global Impact of the Great Depression* (1996) p.128

During the depression the mining companies reduced employment: the major copper and asbestos mines closed for a significant period of time, wages were reduced, while those employed were required to work longer shifts. As a result employment fell faster than output, falling from its pre-depression peak by 72% in 1932 while wages were reduced. The drought increased the supply on unskilled ex-farmers hoping to work on the mine: when Skouriotissa re-opened in January 1933 the influx of labour was so large that it lead to disorder[31]. The increase in the supply of labour led to significant and sustained reductions in wages for both underground and surface workers, while the completion of the processing plant at Xeros led to further worker productivity gains.

As a result employment and wages recovered to their pre-depression levels more slowly than output; the mining companies were successful in pushing the costs of the depression to their employees. Output recovered to its 1929 level by 1935, employment recovered in 1936, while the daily wage paid to underground workers recovered only in 1937[32].

Figure 5.7: Wages expenditure in mining and the share of wages to value added, 1926-1938.



Source: Chapter 5, footnote 32; Appendix B; Cyprus, *Statistical* (*Blue) Book* (1921–1938).

Although the limited taxation imposed by the government enabled the investment in the mining sector, it is clear that the free standing mining companies were also successful in minimising their contribution to the government revenue. As we have seen above, the cumulative amount of taxation

[31] Lavender, *The Story of...* (1962)
[32] National Archives, London. File: CO69/42, /43, /45 "Annual Report of the Inspector of Mines" for the years 1930, 1934, 1938.

collected by the Cypriot government was very limited, while the government was eager to provide assistance to the mining companies in every way possible.

Support was given at all times and from all levels of government. Fatal accidents in the mines were common with Skouriotissa mine having a particularly serious fire in 1925[33]. Under Cypriot law, mining fatalities initiated a government inquiry, which could force the company to pay compensation if the coroner deemed that the company was to blame. Yet from 1926 to 1938, there was not a single case where the company was found to be at fault. This was extraordinary: in 1930 a man was electrocuted at the underground works of Skouriotissa, as the company had failed to insulate its electrical equipment, but the inquiry into the man's death did not find CMC at fault[34]. In addition the government co-operated to such a degree that the police would imprison workers in cases of gross neglect of their duties in the mines[35]. This relationship worked both ways as the mining companies offered their assistance to create special relief works in order to alleviate unemployment during the depression at the request of the inspector of mines[36].

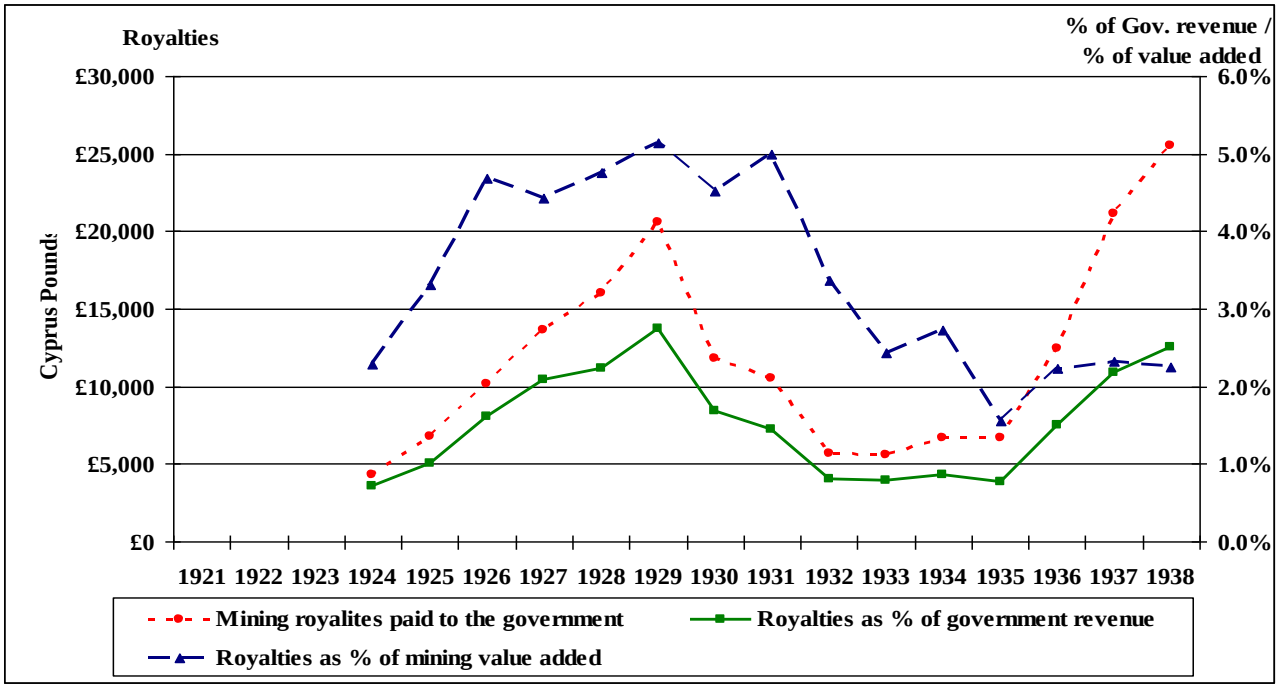
The eagerness of the government to aid mining companies applied at all levels of government. When the Cyprus Asbestos Company asked for a modification of the companies' law in July 1931, the government took the unprecedented step of calling both the executive and legislative council up to the summer quarters in order to pass the law during the summer recess[37]. The British government saw the foreign mining companies as natural allies against local intransigence: when the colonial office considered replacing the troublesome legislative council with a new body, the government considered placing an unelected official chosen by the mining companies to sit in the Cypriot assembly[38].

Despite the support of the government, its revenue from the mining companies was minimal. Capital goods and some other goods considered essential were not subjected to any duties, thus significantly reducing the yield of government customs duties. The only taxation levied on mining companies was fixed, pre-agreed mining royalties. The royalty was paid at a variable rate on the amount of ore that was exported. Yet, as figure 5.8 shows, the share of value added that was

[33] Varnanva, P., General Secretary of the local Greek Labour Union of the CMC, *Μεταλλωρύχων Μνήμες* [Miner's Memories], DVD, (2007). The numbers of dead were unknown as the company failed to keep an accurate check on the employees working underground.
[34] National Archives, London. File: CO69/42 "Annual Report of the Inspector of Mines 1930" p.4.
[35] National Archives, London. File: CO69/42 "Annual Report of the Inspector of Mines 1931" p.5.
[36] National Archives, London. File: CO69/42 "Annual Report of the Inspector of Mines 1933" p.12
[37] Georghallides, *Cyprus and the Governorship…*(1985) p.637
[38] Georghallides, *Cyprus and the Governorship…*(1985) p.167; the suggested changes were never attempted since the constitution was permanently suspended in 1931.

received by the government as tax was minimal as taxation averaged at just 3.4% of the value added of the sector and the average proportion of royalties to total government revenue was just 1.5%. During the great depression the government was facing a serious budget crisis, yet it still suspended some of the industry's royalties in order to help companies weather the financial crisis. The royalties paid to the government fell faster than the drop in output in the period 1930–1935, since the government reduced some royalties and suspended those for asbestos and gypsum[39]. Considering the high level of profit potential of the mining companies, it is clear that the government failed to receive sufficient remuneration for providing the right to excavate on the island. As a result the government did not ensure that it received sufficient funds to finance its proposed development programmes.

Figure 5.8: Royalties received from the mining sector, 1924-1938.



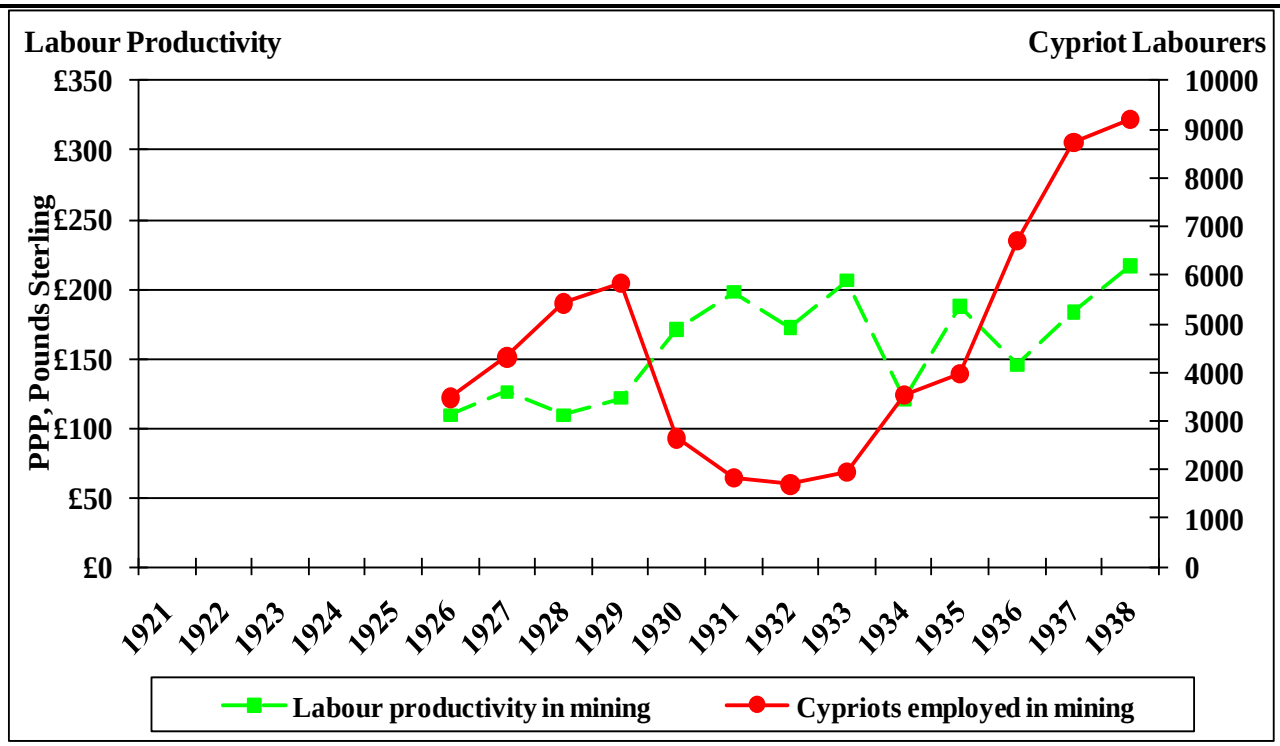
Source: Chapter 5, footnote 32; appendix B; Cyprus, *Statistical (Blue) Book* (1921–1938).

Labour productivity in mining

The section here uses the data available in the inspectorate of mines and labour in order to create an accurate annual labour productivity estimate. Unlike chapter 3 the productivity here is estimated on the basis of the average labour per mine per day, which is a much more accurate measure than the occupation statistics provided in chapter 3. It confirms that labour productivity was at a high level but its growth was slow until 1929: it was only when substantial capital investment and extended work hours during the depression that output per worker continued an upward trend.

[39] Oakden, *Report on the Finances* (1935), p.22

Figure 5.9: Value added per employee in mining and quarrying, Cyprus (Labour Productivity), 1926-1938.



Source: Chapter 5, footnote 32; Appendix B (PPP adjusted)

The mining companies' growth in the interwar period set the stage for Cyprus' catch-up after the Second World War, providing employment and capital investment, as well as foreign exchange, at a time when Cypriot farming was in crisis. These benefits were very important, even thought the multiplier in the economy was less than suggested as the exported profits deflated the value added in GNP terms. At the forefront of the mining expansion was the emerging copper industry, and in particular the CMC. Companies such as the CMC managed to shift a substantial burden of the depression on their workforce and thus maintained significant profits from 1929 to 1933. At the same time, despite the very close relationship between the mining companies and the government, the royalties paid as tax were so low that they did not alleviate the government's growing deficit crisis.

Despite the stellar performance of the sector, it could not prevent Cyprus from having a lacklustre income growth in the interwar period. Without it, the GDP growth performance of Cyprus would be stagnant. However, the rapidly emerging mining sector was not a panacea for the problems facing the agricultural industry: large profits of the mining industry were expatriated, while employment was not enough to alleviate the mass underemployment in agriculture.

Alexander Apostolides

Chapter 6: Manufacturing, Handicrafts, Utilities and Construction

"While no appreciable growth was registered in the manufacturing industry during these years, or for many years afterwards, there was one sector – the building trade – that grew significantly, driven by both public funds and private capital"[1].

This chapter focuses on the secondary sector. Although this is the first documented estimate of industrial output, the available data required substantial extrapolation, and as a result the estimates as less robust than those of agriculture. The progress of the manufacturing sector was disappointing in terms of output. Malta and Cyprus could only partially participate in the increased dissemination of industrial innovation in Europe, due to their small economic size and the turbulent interwar trade conditions. The development of foreign markets was prevented by the faltering European trade, while their small size precluded the development of large industrial units. In addition the domestic markets were eroded by external competition and the lack of colonial protectionism led to further limitations on industrial development. The empire's protectionist system was designed to enable a greater penetration of colonial markets by British manufacturing products and not in promoting manufacturing production in Cyprus and Malta. All this led to a lack of investment and modernisation, and as a result the manufacturing industry in Cyprus was dominated by artisans who found it increasingly difficult to compete with factory-made imported goods. On the other hand, the construction industry rapidly increased its output in both colonies, supported by increased public works construction and the growing demand for housing. Urban housing demand was building up for some time and with the establishment of bus routes the potential was released, as the bus network allowed for an expansion of the metropolitan area.

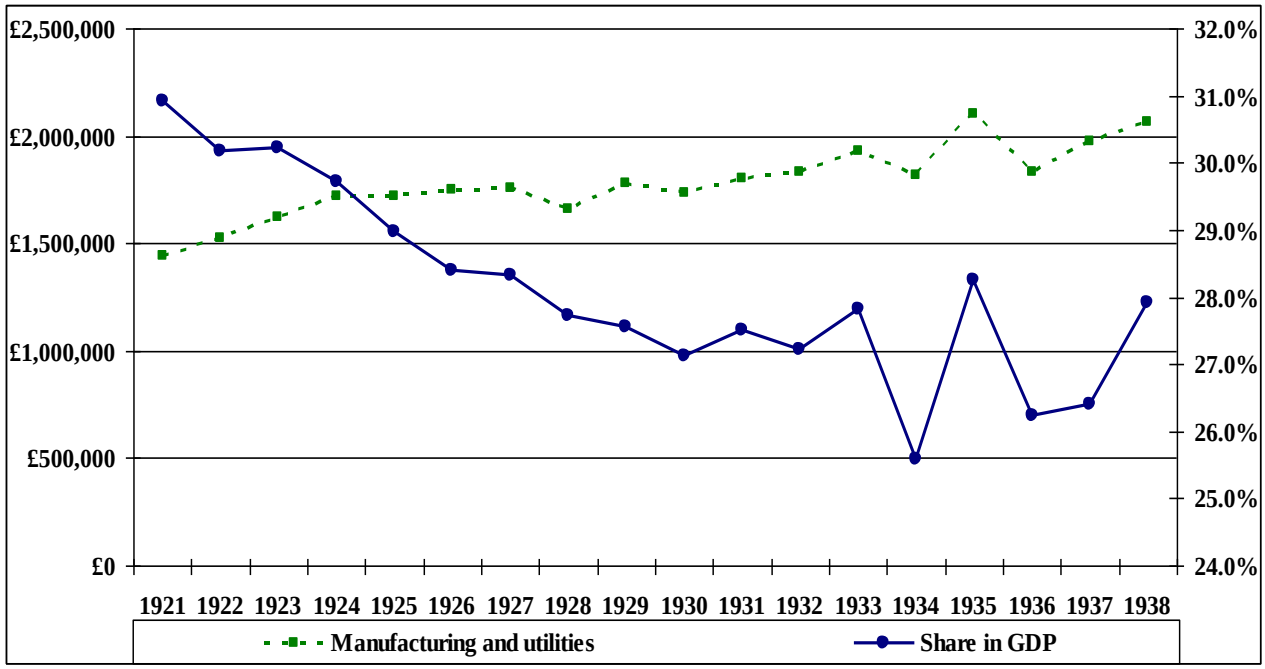
Manufacturing and utility output

At 30.9%, the share of manufacturing in GDP in 1921 was greater in Malta than in Cyprus. The Maltese manufacturing sector was dominated by the Royal Navy Dockyard, constituting 42.3% of manufacturing value added. Thus, the growth of the Maltese economy largely depended on a good performance of the manufacturing sector, and of the dockyard in particular: a decline in Dockyard output acted as a significant drag on the rest of the economy. The output of the dockyard grew until 1924, aiding the Maltese economic recovery, but then went through a slow decline until 1935. This led to a slowdown of manufacturing output, leading to a decline of the share of manufacturing in GDP. This continued even after the Second World War: by 1963 the manufacturing sector

[1] Fenech, *Responsibility and Power…* (2005), p.174

contributed just 16.8% of GDP despite significant post-war investment: there was no industrial take-off for Malta in the 20th century[2].

Figure 6.1: Value added of manufacturing, handicrafts and utilities, Malta, 1921-1938

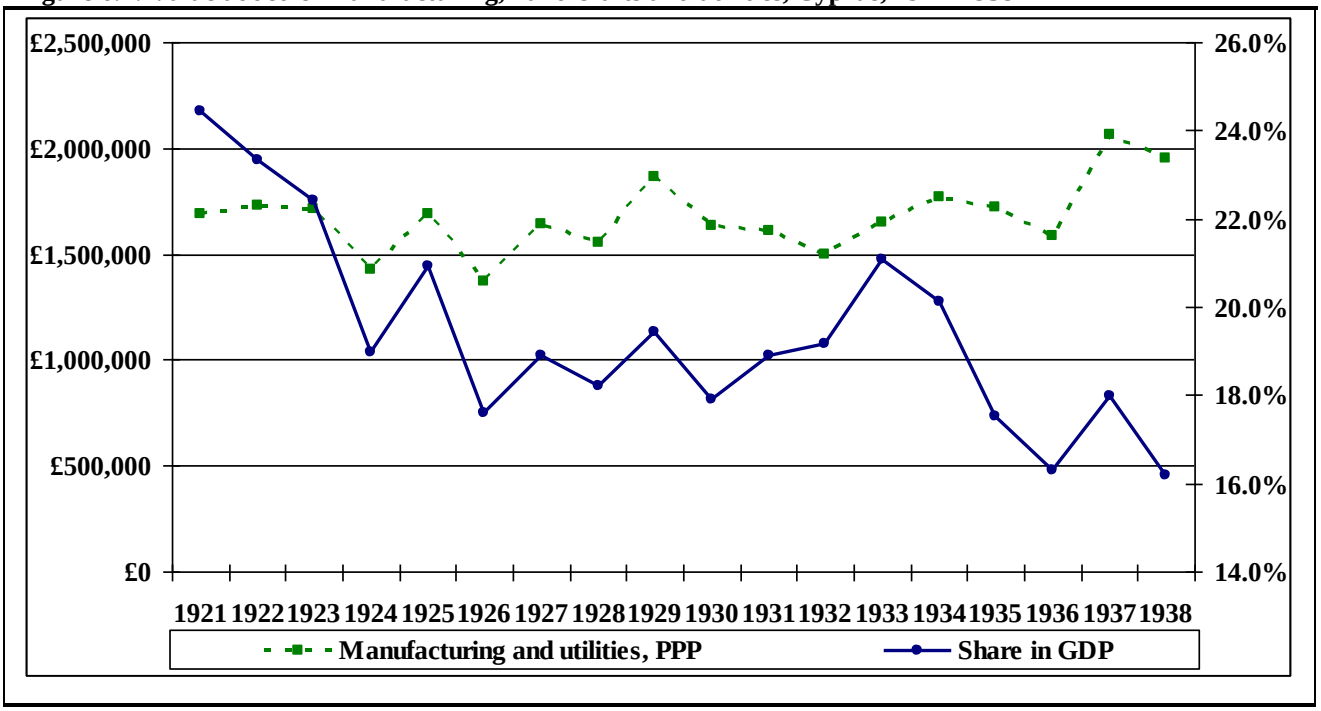


Note: In constant 1938, PPP, pounds sterling. Source: Appendix C.

The manufacturing industry in Cyprus was struggling to keep up with the rest of the economy in terms of output growth. As figure 6.2 indicates, Cypriot manufacturing output grew very slowly in the early 1920s, while experiencing deep and repeated reversals in the 1930s. The volatility was due to the importance of the food, drinks and tobacco sector which constituted 41.5% of manufacturing value added; this sector was depended on the prevailing conditions in agriculture. Thus the poor growth of agriculture in the 1930s also dragged this large section of manufacturing to poor output growth affecting manufacturing output. As a result, the share of manufacturing in GDP declined from 25.4% in 1921 to 16.8% in 1938. Similarly to Malta the decline of manufacturing to GDP continued, falling to just 12.3% of GDP by 1959[3]. Thus the economies of Cyprus and Malta after the Second World War did not develop by expanding industrial production but by an expanding service sector.

[2] Central Office of Statistics, Malta, *National Accounts of the Maltese Islands* (1964), p.x
[3] Republic of Cyprus, *Statistical Pocket Book, No.1* (1978)

Figure 6.2: Value added of manufacturing, handicrafts and utilities, Cyprus, 1921–1938



Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted).

Table 6.1: Value added of manufacturing, handicrafts and utilities, Cyprus and Malta, 1921-1938

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	1,449,565	1,689,395	1930	1,717,798	1,631,485
1922	1,528,482	1,725,612	1931	1,780,284	1,611,058
1923	1,624,335	1,708,541	1932	1,814,032	1,499,000
1924	1,720,517	1,425,490	1933	1,909,765	1,647,408
1925	1,722,841	1,684,777	1934	1,794,103	1,766,122
1926	1,749,853	1,372,266	1935	2,079,597	1,723,611
1927	1,750,331	1,640,325	1936	1,809,414	1,584,237
1928	1,650,967	1,549,314	1937	1,957,967	2,060,644
1929	1,769,353	1,866,604	1938	2,042,281	1,954,388

Note: In constant 1938, PPP, pounds sterling. Source: see appendix B (PPP adjusted), appendix C.

Table 6.2: Per capita value added of manufacturing, handicrafts and utilities, Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Cyprus	Malta
1921	5.44	6.78	1930	4.74	7.27
1922	5.49	7.07	1931	4.63	7.45
1923	5.38	7.43	1932	4.23	7.48
1924	4.43	7.78	1933	4.57	7.77
1925	5.18	7.71	1934	4.82	7.20
1926	4.17	7.74	1935	4.62	8.22
1927	4.93	7.65	1936	4.18	7.06
1928	4.61	7.14	1937	5.34	7.53
1929	5.49	7.57	1938	4.98	7.74

Source: Appendix B (PPP adjusted), appendix C; Table 3.2.

The output of the utility sector in Cyprus was very low and is included in the estimates above. Although data constraints make the output of the utilities sector precarious it is clear that the low output represented the lack of basic infrastructure throughout the island. There was no substantial government expenditure on water, sewerage and electricity, which were left to localised efforts by

municipalities and private companies[4]. Malta was fortunate to have some infrastructure already in place prior to 1921 as the urban area surrounding the Grand Harbour had been electrified and connected to a water system during the reconstruction of the harbour area prior to First World War.

Both islands were energy deficient: the Cypriot sources of energy were firewood and charcoal, which were available quite cheaply from the local government forests[5]. The lack of sufficient transport links to the outside world made imported coal expensive, resulting in the use of charcoal in coal fired machinery, hampering its efficiency[6]. Electricity generation was at an embryonic stage: some large businesses established their own generators, and Larnaca, Limassol and Famagusta had their own private power stations. The provision of electric light was a significant step forward for Cypriot cities, since gas lighting was non-existent. The government had its own electric generator in Nicosia, but it was used only to light government buildings[7]. However the stations were small and inefficient, leading to electricity generation being limited and expensive, and largely focused on providing electric light rather than electric power[8]. The situation did not change until after the 1950s, when the lack of electricity was seen as the key stumbling block to future economic development[9]. This could have been an added stumbling block to manufacturing growth in the interwar period: Cyprus would have found it difficult to adapt to energy-intensive practices introduced in Europe during the interwar period, due to the lack of fuel sources. Jalava indicated that Finland managed to catch up to the wealthier European states during the interwar period due to the increase in productivity in manufacturing, which was mainly the result of the great diffusion of electrical machinery through the use of electricity[10].Yet more research is needed to test if energy deficiency acted as a check to manufacturing growth in Cyprus and Malta.

In Malta the availability of energy reinforced the split in the economy, with the military-oriented Grand Harbour area being adequately supplied, while the rest of the colony was devoid of energy resources. A large coal fired power station in the Grand Harbour area provided adequate energy for the Royal Navy Dockyard and also supplied electricity to the neighbouring cities of Valetta,

[4] Electricity Authority of Cyprus, "The History of Electricity in Cyprus and the Electricity Authority of Cyprus (EAC)" http://www.eac.com.cy/EN/ourorganization/Pages/History.aspx as consulted 10 Jun 2009.
[5] Christodoulou, D., *The Evolution of the Rural Land Use*... (1959), p.103
[6] Angelides, "The Cyprus Economy…" (1996) p. 212
[7] Electricity Authority of Cyprus, "The History of Electricity in Cyprus", (2009).
[8] Christodoulou, *Inside the Cyprus Miracle*...(1992) p.111
[9] Thorp, *Cyprus*… (1961),p.62
[10] Jalava. J. "Electrifying and Digitalising the Finnish Manufacturing Industry: Historical Notes on Diffusion and Productivity" in Jalava. J. *Essays on Finnish Economic Growth and Productivity 1860-2005* (Helsinki: Statistics Finland, 2007), pp.72-84, p.74,76

Cospicua, Vittoriosa, and Senglea[11]. Yet the rest of Malta was completely lacking in utilities, while domestic fuel resources were very limited.

The Maltese parliament wanted to expand the area connected with the utility network in the late 1920s and provided funds for the extension of sewerage, electricity and water. The dual government constitution provided for joint financing of utility projects at a ratio of 3:4 with the imperial government. Yet, the British treasury refused to provide its share of capital, stalling the efforts of the Maltese government, while the capital put aside for investment was exhausted by the British military's refusal to pay for their use of electricity or water services[12].

The disparate effects of the depression on Cyprus and Malta discussed in chapter 3 were evident in the manufacturing sector, as shown in table 6.3. Cypriot manufacturing declined as dramatically as the output of agriculture, during the recession while Malta did not suffer from manufacturing output reversal, but saw a slower growth of output.

The manufacturing output was divided into a formal manufacturing and a handicraft sector. Even within the formal manufacturing the majority of output took place by self employed artisans with low productivity. There was no real drive towards industrialisation in Cyprus, and there were no industrial units of a substantial size on the island. The handicraft output was carried out by artisans in their homes. It was differentiated by the manufacturing industry due to the different modes of production and separate estimation procedures, as explained in chapter 2[13]. The formal manufacturing sector was essentially an urban affair, but the handicraft sector extended throughout the islands. The handicraft trades were dominated by textile makers, tailors, milliners, glove makers, carpenters, shoemakers and blacksmiths: output per worker in the handicraft was lower than similar occupations in the formal manufacturing industry. Greaves suggested that Cyprus was a rural, agricultural country with a small manufacturing industry in the hands of artisans. This is verified as formal manufacturing (with bread making removed) represents just 4.8% of GDP in 1938[14]. Cypriot handicraft output constituted 7.9% of GDP in 1938 while Malta's was 4.4%; thus Cypriot handicraft was much more important than in the Maltese economy.

[11]Bonnici, J. & Cassar, M., *A Chronicle of Twentieth Century Malta*, (Malta, Book Distributors Ltd, 2004), p.138.
[12] Fenech, *Responsibility and Power…*, (2005), pp.216-217
[13] See: Chapter 2, pp.47-48, Section "MF = Manufacturing and handicrafts (Nace Code: C)"
[14] Greaves, *Report on Economic Conditions…*(1935) p.6

Table 6.3: Yearly growth of manufacture, handicrafts and utilities, Cyprus and Malta, 1921-1938.

Year	Malta		Cyprus	
	Value added (%)	Per Capita (%)	Value added (%)	Per Capita (%)
1921–1922	5.6	4.3	2.1	1.0
1922–1923	6.5	5.1	-1.0	-2.1
1923–1924	6.1	4.7	-16.6	-17.5
1924–1925	0.3	-1.0	18.2	16.9
1925–1926	1.7	0.4	-18.6	-19.5
1926–1927	0.2	-1.1	19.5	18.2
1927–1928	-5.5	-6.7	-5.6	-6.6
1928 –1929	7.3	6.0	20.5	19.1
1929–1930	-2.7	-3.9	-12.6	-13.6
1930–1931	3.8	2.5	-1.3	-2.4
1931–1932	1.9	0.5	-7.0	-8.5
1932–1933	5.2	3.8	9.9	8.0
1933–1934	-6.0	-7.3	7.2	5.4
1934–1935	15.7	14.1	-2.4	-4.1
1935–1936	-12.8	-14.1	-8.1	-9.7
1936–1937	8.1	6.6	30.1	27.9
1937–1938	4.3	2.8	-5.2	-6.8
1921–1938	2.1	0.8	0.9	-0.5
1921–1929	2.1	0.8	-0.4	-1.5
1930–1938	2.2	0.8	2.3	0.6
GDP Peak to Peak (1925-1937)	1.1	-0.3	1.7	0.3

Source: Table 6.1.

The output of manufacturing in Malta can be divided into its constituent industries, as indicated in figure 6.3. The general manufacturing is a catch-all category, out of which the Dockyard represented 98.3% of its output in 1938: thus the output of this category is an accurate representation of dockyard output. There was no other heavy industry in Malta other than the dockyard which was massive in relation to the size of the country as it was one of the largest dockyards of the British navy[15]. Its size can be appreciated from the fact that it employed over 10,000 Maltese workers in 1939, at a time when only 31 industrial firms employed that number in the UK[16]. The dockyard was a state-of-the-art facility: Fenech argues that it was an industrial unit of modernity stuck on an island of limited technical progress[17]. The importance of the dockyard to the Maltese economy should not be underestimated. It directly provided 54.8% of total manufacturing output in 1938, which constituted 12.8% of the Maltese GDP. Its importance was appreciated by contemporary writers and historians, who considered that the health of the Maltese economy depended on the decisions of the Royal Navy regarding the dockyard[18]. Despite downsizing employment during demilitarisation in 1919, the dockyard's output showed a steady increase after 1921, while substantial investment began to increase its capacity. By the late 1920s a new floating

[15] Ellul, M., *H.M. Naval Dockyard, Malta: Society, Work and Industrial Relations in a British Naval Base 1900-1939,* (Unpublished M.A, University of Malta, 2004), p.41

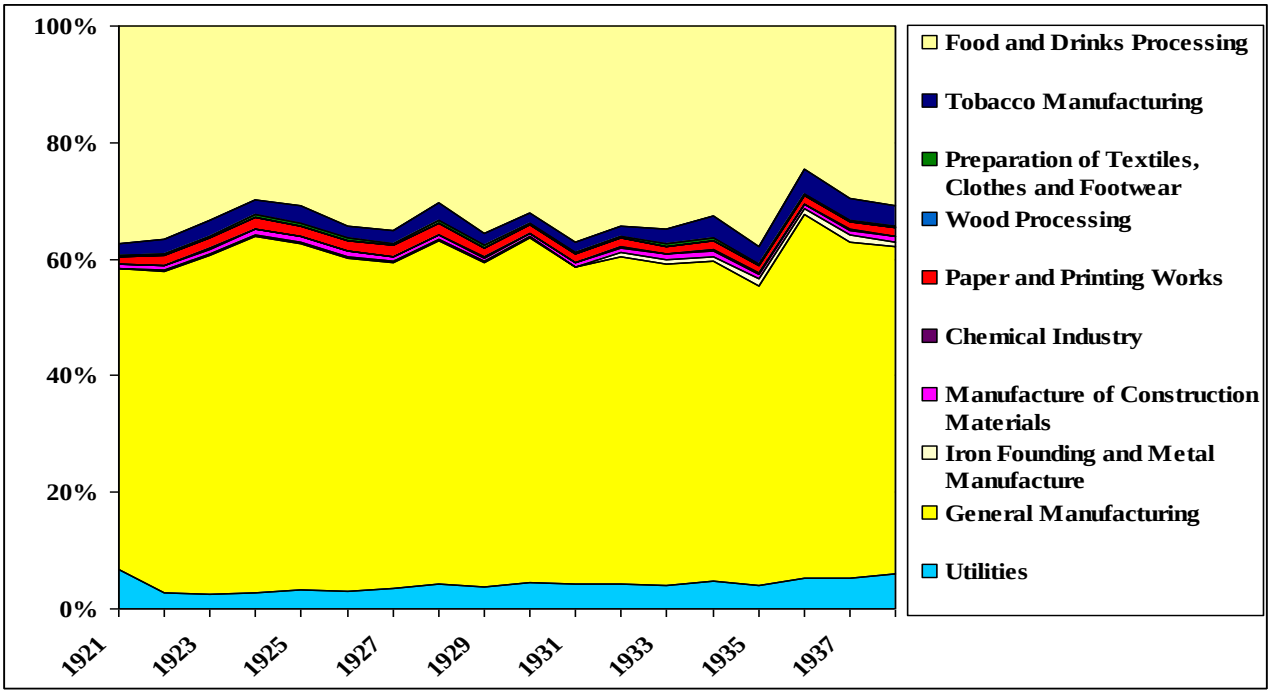
[16] Haas, J.M., *A Management Odyssey: The Royal Dockyards 1714-1914* (Maryland: University Press of America, 1994) p.3

[17] Fenech, *Responsibility and Power…,* (2005). p.16

[18] Greaves, *Report on Economic Conditions…*(1935) p.37; Abela, *Malta, A Developing Economy* (1963) p.2

dock and goliath cranes were installed which were, capable of repairing the largest capital ships and in addition new mooring quays were constructed[19].

Figure 6.3: Manufacturing and utilities per sub-group, Malta, as share of value added (%), 1921–1938.



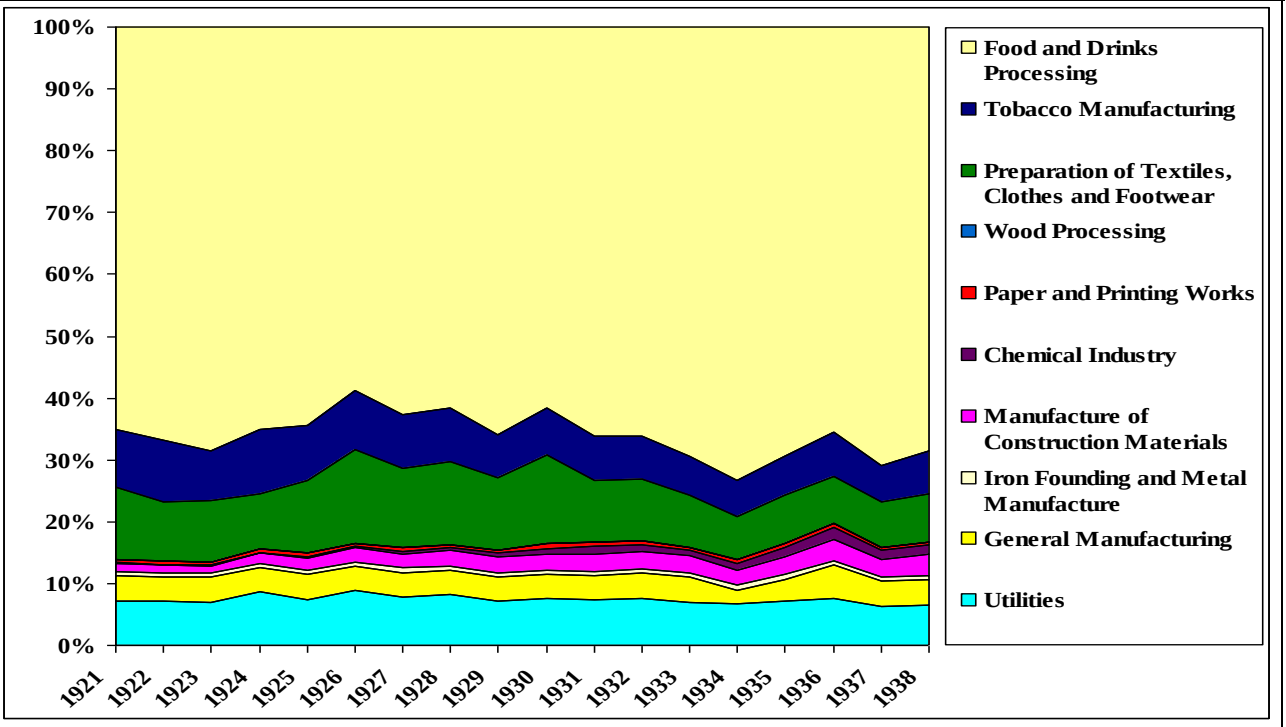
Source: Appendix C.

The second largest category was the food and drinks processing, which experienced slow and steady growth until 1927, and then went through violent expansion and contraction, peaking in 1935. As a result its share of formal manufacturing declined from 40% in 1921 to 26.8% in 1938. The decreasing share of food and drinks industry was replaced by an increase in the shares of output by tobacco, wood processing and iron founding industries, partly due to incentive measures initiated by the Maltese self-government discussed below. However, these industries still remained a relatively small part of output in 1938.

In Cyprus there was no large industry equivalent to the Maltese dockyard. Figure 6.4 confirms that the manufacturing industry of Cyprus mostly comprised of food, drink and tobacco processing: these produced 81.6% of formal manufacturing output, representing 6.7% of GDP in 1938. This was the only significant industry in Cyprus in terms of output and it remained important throughout the interwar period. The chemical industry exhibited rapid growth, but remained a small part of output since it hardly existed in 1921, while the manufacture of construction goods increased rapidly as the construction sector boom increased the demand of materials.

[19] Ellul, "H.M. Naval Dockyard, Malta" (2004), p.42

Figure 6.4: Manufacturing and utilities per sub-group, Cyprus, as share of value added (%), 1921–1938.



Source: see appendix B (PPP adjusted).

The manufacturing industry did not become the focal point of economic growth during the interwar period, although it was undergoing substantial technological change in the rest of Europe. The failure to industrialise condemned the islands to slow growth during the interwar period, particularly Malta, whose GDP was dominated by the Royal Navy Dockyard. It is clear that for Malta industrial growth was based on the performance of the Dockyard whose output was flattened out after a promising start in the 1920s. The next section attempts to understand why manufacturing did not achieve faster growth.

Why was industrialisation so slow?

The decline of the relative share of manufacturing in Cyprus and Malta during the interwar period was contrary to the development of the European periphery. European manufacturing in the interwar period underwent a rapid growth in labour productivity, resulting in significant output growth[20]. The First World War delayed the uptake of new technology by European states and thus after the war, the adoption of production enhancing technology in Europe accelerated. The greater diffusion of general purpose technology such as electricity and automotive transport further accelerated European manufacturing growth during the period 1921-1938 since it was combined with the spread of new industrial products and processes. The diffusion of technical knowhow was also occurring geographically as peripheral European countries had the opportunity to assimilate to some extent the processes that provided rapid industrial growth in the advanced European countries[21].

The great depression divided the experience of developing European countries: for countries focused on export-led industrialisation, the depression acted as a check in growth performance, while for others the depression encouraged autarky and import-substitution, leading to faster industrial growth. Greece, Turkey and Romania achieved substantial progress in industrial output, but Czechoslovakia and Poland found industrial recovery difficult[22].

Table 6.4 places the manufacturing performance of Cyprus and Malta within a European perspective. Industrial output growth in Greece, Turkey and Bulgaria was substantially faster than in Cyprus and Malta during the period 1921-1938. Cyprus and Malta were the only economies in Table 6.4 whose relative share of manufacturing declined during the interwar period. One could argue that the rapid output growth of other Southern European countries was due to their low manufacturing share in GDP, since catch-up growth is faster when a nation is further behind the leading industrial country[23]. While it is true that the manufacturing share in GDP in Cyprus and Malta was larger than in other peripheral countries, this could be due to differing estimation procedures in each study. In addition, table 6.4 indicates that even the developed countries of Europe were achieving higher industrial growth rates than Cyprus and Malta. The Netherlands, a relatively small developed country of Western Europe, achieved much higher industrial growth rates than either colony. The development of British manufacturing during the interwar period was considered particularly poor, and yet the growth of industrial output was faster than in either Cyprus

[20] Feinstein, Temin & Toniolo, *The European Economy…* (1997) p.80
[21] Ibid. p.60, p.81.
[22] Ibid. p.172
[23] Abramowitz, "The Catch-up Factor...", (1990), p.2

or Malta. The islands' manufacturing performance was particularly poor when compared to other European states, which demands explanation.

Table 6.4: Manufacturing output growth in Southern European countries and colonies, 1921–1938.

	Period	Currency	Manufacturing value added growth per annum (%), 1921-1938	Share (%) of manufacturing to GDP in circa 1921	Share (%) of manufacturing to GDP in circa 1938
Turkey	1923–1938	1990 Geary-Khamis Dollars	7.7	12.0*	17.0
Greece	1921–1938	1914 Drachmas	5.4×	7.2	9.8
Bulgaria	1921–1938	1911 Levas	3.7	8.8	9.6+
Cyprus	1921–1938	1938 Pounds Sterling, PPP	0.9	25.4	16.8
Malta	1921–1938	1938 Pounds Sterling	2.1	31.1	27.7
Britain	1924–1937	1938 Pounds Sterling	3.2	30.9†	34.8†
Netherlands	1921–1938	1913 Guilders	4.1	27.5	36.9

Notes: *Share of Manufacturing in Turkey to GDP in 1923; +Share of Manufacturing in Bulgaria to GDP in 1939 † Share of Manufacturing in Britain in 1924 and 1937. ×The growth rate of Greek industry for 1921-1938, as suggested by Christodoulaki, ranges from 5.1-4.9%. Sources: Bulgaria- Ivanov, & Tooze "Convergence or Decline..." (2007), p.685; Turkey- Sevket Pamuk, "Intervention during the Great Depression...", Ch.12 in Pamuk and Williamson, *The Mediterranean…* (2000), p.325; Greece– Kostelenos *et al*., *Ακαθάριστο…*(2007), Appendix. The share of manufacturing was estimated based on the maximum GDP estimates (Table 7-II). Christodoulaki, I., "Industrial growth revisited: Manufacturing output in Greece in the interwar period" *Working Paper London School of Economics, Department of Economic History*, no. 50 (1999) p.21. Malta / Cyprus- Table 6.3. Britain- Matthews, R.C.O, Feinstein, C.H., Odling-Smee, J.C, *British Economic Growth 1856-1973* (Stanford: Stanford University Press, 1982), p.222, p.228 Netherlands- Smits, J.P, Woltjer, P.J., and Ma, D., 'A Dataset on Comparative Historical National Accounts, ca. 1870-1950: A Time-Series Perspective', *Groningen Growth and Development Centre Research Memorandum* (2009), GD-107.

Evidence from Greece argues that industrial growth was already rapid during the 1920s, but that there was a rapid acceleration when Greece shifted towards autarky and protectionism in the 1930s[24].The success of the Greek industrialisation would not have been possible without increasing tariff protection during the tumultuous 1930s, as global trade was distorted by tariffs and its separation into distinct currency groups[25]. The shift to autarky that took place in most peripheral countries (that were not colonies) was a mixture of import substitution and protectionism stimulating industrial growth in the interwar period at a cost of poor future performance[26]. Mazower argues that the growth of manufacturing in Greece was purely due to import substitution[27]. Thus, the 1930s was a unique period in European history: it was a decade where import substitution and protectionism formed a winning strategy for growth, shielding peripheral economies from the effects of the collapsing world trade and beggar-thy-neighbour policies[28]. Pamuk concurs, arguing

[24] Christodoulaki, "Industrial growth revisited..." (1999) p.27
[25] Mazower, *Greece and the Interwar*... (1991), pp.250-256; Feinstein, Temin & Toniolo, *The European Economy…* (1997) p.153.
[26] Maddison., A., *Two Crises: Latin America and Asia 1929-1938 and 1973-83* (Paris: OECD, 1985), p.17
[27] Mazower, *Greece and the Interwar*... (1991), p.252 Table 9.6
[28] Aldcroft, *Studies in the Interwar…* (1997), p.214

that the success of South European countries in promoting manufacturing was due to exchange control barriers and tariffs rather than the direct government intervention in the economy[29].

This caused a problem for British Colonies as they could not independently impose their own tariff barriers: the colonial office had the final say on tariff levels, and exceptions had to be made for other members of the Commonwealth[30]. The failure to raise tariffs at a sufficient level hurt colonial manufacturing and textile production in particular[31]. Cyprus and Malta were historically important centres of textile production, but the industry was in decline before the First World War, although it remained important in terms of female employment[32]. The industry suffered from serious competition during the interwar period from cheap imports from Italy and Japan, and was hampered by the colonial governments imposing export duties in order to boost government revenue[33]. These imports were cheaper than the local cloth and thus dominated the local textile market, resulting in a decline of output in domestic clothing and textiles, leading to a significant reduction in the employment of women in the economy[34]. The imperial tariff system, established in 1933, allowed Malta and Cyprus to impose very restrictive duties and quotas on Japanese and Italian imports, but the preferential duty towards British products resulted in the textile market being dominated by British goods, with the domestic industry just recovering to its pre-depression level[35].

However, even if tariffs were significantly raised, the small domestic markets of Cyprus and Malta could not justify the private investment that was necessary to modernise the industry. The small size of the two economies was the main factor in the islands' poor manufacturing performance since the market size was limited and industry could not export a substantial quantity of its output. Even if the protectionist and interventionist policies of Greece and Turkey were implemented in colonial Cyprus and Malta, they would have been less effective due to the islands' small market size. The small population of the islands, combined with their low income level, meant that the domestic market had a very limited capacity to absorb manufactures; any substantial manufacturing industry would have to rely on exporting most of its products to the surrounding region[36]. However, during the interwar period the high tariffs throughout the Mediterranean precluded export-led

[29] Pamuk, "Intervention During the Great Depression", (2000), p.323
[30] The tariff level was considered low by Oakden, *Report on the Finances* (1935) pp.160-162
[31] For example of India: Rothermund. *The Global Impact of the Great Depression* (1996) p.93
[32] Cyprus was a key centre of cotton during the Middle Ages, and Malta was an important centre of cotton twist until the 18th century. Source: Abel, B., "The Economy of Cyprus in the Venetian Period" in Karageorghis, V. & Michaelides, D. (eds.) *The Development of the Cypriot Economy...* (1996), pp.185-192, p.186; Charlton. "Trends in the Economic…" (1960) pp.30-31
[33] Greaves, *Report on Economic Conditions…*(1935), p.6, p.42
[34] Ibid. p.20
[35] Ibid. p.12
[36] Feinstein argues that small markets during the period were a disincentive for investment: Feinstein, Temin & Toniolo. *The European Economy…* (1997), p.81

manufacturing growth, while the low colonial tariffs meant that domestic manufacturing industries were in fierce competition in their own limited domestic markets. The size of the domestic markets of Cyprus and Malta, combined with the fragmented economic relationships of the Mediterranean, ensured that the islands' development was not through industrialisation.

Thus small states with limited domestic markets need trade liberalisation in order to stimulate manufacturing output through exports. Small states have less to gain through import substitution because their local market may be smaller than the minimum efficiency scale of modern technology[37]. The decision by neighbouring countries to adopt protectionist policies made investment in modernisation difficult. Only an unusual expansion of the domestic market, combined with government incentives, would provide significant investment for new manufacturing units, which were capable in raising output and productivity.

Such expansion occurred regularly in Malta through the visits of British servicemen. The presence of several British army, navy and air force bases in Malta expanded the domestic market for consumer products. The British navy personnel stationed, or on shore leave, in Malta were particularly numerous, comprising at times up to 10% of the Maltese population and creating a vociferous demand for beer, spirits, cigarettes and uniform apparel. The expansion of demand for such products during shore leave could be quite staggering: navy personnel alone consumed over 5 million cigarettes per month in Malta[38]. The additional demand was large enough for new industrial units to be established. A brewery was established in 1926 and it by 1938 it was exporting small quantities of beer while catering for the large servicemen market[39]. A small factory was also established by British American Tobacco to produce cigarettes in Malta. Both industries were indirectly aided by the government in 1927 who, in its attempts to improve government revenue, placed excise duties on foreign beers and cigarettes[40].

Size was the primary constraint to faster industrialisation but the manufacturing industry was also faced with other problems. The technological advances of the interwar period were concentrated in sectors that were largely absent from the islands. The interwar period initiated new products and processes and allowed for a dramatic lowering of prices, which enabled great increases in output in

[37] Christodoulou, *Inside the Cyprus Miracle…*(1992) , p.91 , Briguglio, L., "Island Economies: Plans, Strategies and Performance, Malta" *Economics Division Working Papers, Research School of Pacific Studies, Australian National University, Canberra,* (1992) p.20
[38] Fenech, *Responsibility and Power…*, (2005), p.174
[39] Charlton. "Trends in the Economic…" (1960) p.140; Greaves, *Report on Economic Conditions…*(1935), p.47
[40] Fenech, *Responsibility and Power…*, (2005), pp.174-175

sectors such as electrical goods and motor vehicles[41]. Yet the islands' small size and their limited resource endowments precluded the development of such industries and thus the islands could not capitalise on the technological advances that led to the fastest industrial growth.

Even with such industries being largely absent Southern European countries successfully increased their output through investment in the staple industrial sectors such as food processing, textiles and chemical production. The impetus of modernisation in Turkey and Greece stemmed from their increasingly interventionist governments. These governments were facing a possible debt default and foreign exchange scarcity: as a consequence, they desired their economies to be geared towards greater self-sufficiency. National and quasi-national banks, facing pressure from nationalistic governments, responded by providing the required capital to modernise staple industries. In Greece, the funding for investment was actively provided by the National Bank of Greece, which was by then the sole note issuer[42]. At the request of the government, which wanted to reduce its reliance on imported manufactures, the bank took the role of a universal bank by providing investment loans to domestic factories[43]. These factories were aided by government policies of autonomy and import substitution: governments raised tariffs on products that could be domestically produced, while providing a major stimulus to domestic manufacturing through the cancellation of the rural debt, which was transferred to semi-government institutions and subsequently annulled. The elimination of rural debt liquidated a major restraint on consumption in the economy and it created a market of rural consumers for locally produced industrial goods. The Greek government did not have an overreaching plan for raising the country's industrial output: the ad-hoc policies put in place were due to successive crises of the drachma, the national debt and the budget that made the government increasingly interventionist. Interwar growth came at a cost that was made evident later as the competitiveness of an industrial sector dependent on import substitution was poor, leading to a gradual stagnation in terms of productivity and technological know-how in the 1950s and 60s [44]. However, in the short term, the increase in industrial output was the most impressive in Europe after the Soviet Union. The description of the Greek industrialisation indicates that government intervention was necessary for the modernisation of industry in the interwar period, particularly after the great depression.

[41] Feinstein, Temin & Toniolo, *The European Economy…*, (1997), p.81
[42] Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προϊόν* (2007) p.34
[43] Kostis & Petmetzas, "Growth and Stagnation in the Greek Economy… "(2007) p.35
[44] Mazower, *Greece and the Interwar*... (1991), p.237

Yet, Pamuk assures us that the British colonial governments of the Mediterranean, unlike the independent countries of Greece and Turkey, did very little to stimulate manufacturing output[45]. British colonial orthodoxy at the time was based on the principles of non-intervention and balanced budgets, and considered British colonies as lucrative markets for British manufactured exports rather than as a source of manufacturing production[46]. Thus colonies were expected to provide raw materials and markets for British manufacturing, while the establishment of a domestic manufacturing industry in the colonies was to be actively discouraged[47]. The colonial development act of 1929, as well as the imposition of empire-wide tariffs, had the primary aim of stimulating British exports for the economic benefit of Britain[48]. It was not until the Second World War that the outdated conventions of fiscal orthodoxy and non-intervention were seriously challenged within the colonial office by more positive development policies[49].

Even if the possibility of industrial growth was limited in Cyprus and Malta due to their market size, there were some efforts to stimulate manufacturing. The Maltese self-government was eager to promote manufacturing employment, while Cyprus under Sir Ronald Storrs had a governor who was willing to intervene in the economy[50]. Such efforts were limited as both governments struggled to find the funds to intervene in the economy while trying to maintain fiscal surpluses. The efforts of Maltese self-government were more successful than of the Cypriot colonial government, yet even in Malta, the overall effect remained small.

The Maltese self-government attempted to stimulate manufacturing in 1925 by granting production monopolies for fifty years for a number of products[51]. These industries were not protected by imports, and thus competition for the domestic market was not eliminated. All products experienced increases in output, with the largest being in the production of canned fruit, tobacco pipes and oxygen gas[52]. Despite the increase in production these monopolies remained small industries, and as a result their impact on overall manufacturing sector was minimal, while there were complaints about the inferior quality of their products[53].

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[45] Pamuk, "Intervention during the Great Depression", (2000), p.322
[46] Meredith, "The British Government and Colonial Economic Policy", (1975), p.485
[47] Drummond, I.M, *British Economic Policy and the Empire in 1919–1939* (New York: Barnes & Noble, 1972) , pp.30-31
[48] Hyam, R. *Britain's Declining Empire: The Road to Decolonisation 1918-1968* (New York: Cambridge University Press, 2006), p.87
[49] Ibid. p.84
[50] For an account of Sir Ronald Storr's governorship see: Georghallides, *Cyprus and the Governorship…*(1985)
[51] The production monopolies included tobacco pipes, wire nails and screws, matches, handbags, nylon stockings, tyre re-treads, oxygen gas, metal doors and windows, edible oil refineries, and some types of fruit canning. Source: Charlton, "Trends in the Economic…." (1960) p.99
[52] Source: Appendix C
[53] Charlton. "Trends in the Economic... (1960) p101

The Cypriot colonial government provided incentives for British interests to invest, while also investing directly in manufacturing projects that were seen as complementary to agricultural development. The Cyprus Tannery Company established a modern tanning plant in Cyprus in 1929, with the government allowing the firm to import capital and intermediate consumption goods duty-free but the company did not survive the depression and the factory closed down by 1931[54].

More controversial was the decision by governor Storrs to award a monopoly to a British company for Cypriot wine exports to Britain and the empire, on the condition they invest in a modern winery. The governor acted unconstitutionally since he was not at liberty to provide such a monopoly without the consent of the legislative assembly: however, he argued that such a move was imperative in order to attract investment to improve the quality of Cypriot wine[55]. Despite the resistance of the legislative assembly, the monopoly was maintained, often in surreptitious ways[56]. The measure backfired as there were mass protests by grape producers, while no investment was made by the British monopoly company: the greatest investment in wine manufacturing came from the establishment of KEO, a company of Greek and Cypriot interests[57].

The colonial government of Cyprus also attempted to encourage industrial production within the areas where the empire was deemed not to be self-sufficient. Such attempts were wholly within the colonial orthodox mentality. The government's wish to establish a modern silk cocoon processing industry was based on sound principles. The island already had a cocoon industry, and silk production was carried out at handicraft level in the west of Cyprus. Cyprus was the second largest producer of cocoons in the British Empire, yet it exported most of the cocoons unprocessed to Italy and France. The establishment of a modern filature would enable Cyprus to capture more of the value added chain of silk production while using a locally produced raw material and securing the raw material for the empire[58]. The government provided a three year monopoly and customs concessions to the British company of Henckell, Du Buisson & Co to establish a modern silk filature in 1925[59]. The results were unimpressive as the filature closed down within five years, because it did not receive sufficient quantities of cocoons for processing due to the very low prices it offered to the farmers who found it much more profitable to export their cocoons to France. The

[54]Source: National Archives, London. File: CO69/43 "Annual Report of the Department of Agriculture for the Year 1933" p.17
[55]Georghallides, *Cyprus and the Governorship…*(1985), pp.123-124
[56] The governor rejected any other applications for an export licence on the grounds of poor wine quality Ibid. p.126
[57] Ibid. pp.128-129
[58]Source: National Archives, London. File: CO69/40 "Annual report of the Department of Agriculture for the year 1929", "The Silk Industry"
[59] Georghallides, *Cyprus and the Governorship…*(1985), p.120

filature only reached at maximum capacity in 1927 and was run at a loss, closing permanently in 1930[60]. The government also secured funding by the Empire Marketing Board in order to establish a modern flax industry in the Paphos area, but it was not successful and operated at loss[61].

The lack of investment in modernised methods of production resulted in the local artisans of Cyprus and Malta being unable to compete in terms of price and quality with imported factory products. This placed handicraft production under serious pressure as their methods of production were becoming obsolete. Artisans found themselves outcompeted by imported manufactured products. The shoe making artisans in Malta and Cyprus, working in small workshops, could not provide similar quality at the prices of Czechoslovakian factory-made shoes[62]. These shoes were made at Bat'a factories where mass production techniques in the mid 1920s increased productivity, allowing for an increased production from 3.5 million to 15.2 million pairs[63]. As a result, the Maltese shoemakers were squeezed out of the market by the import of cheap, factory-made shoes. The Maltese and Cypriot governments responded by imposing high tariffs on Czechoslovakian shoes in 1933, but the local shoemakers could not cover the shortfall: even if they increased the hours they worked, they simply could not produce the same quality of shoes for the price of the imported factory shoes[64]. As a result Bat'a increased its market share in Cyprus and Malta even after the imposition of the tariff[65].

Cyprus and Malta did not experience an industrial performance similar to neighbouring countries due to their small market size, the lack of tariff protection and the lack of sufficient government intervention. The islands failed to keep up with the manufacturing growth of other Southern European peripheral states, since the international situation, combined with their limited domestic market made modernising their manufacturing industry difficult. Other factors also hindered faster industrial growth: the domestic market was competitive due to the lack of sufficient tariffs, while the islands' artisans could not compete with the price of factory-made imports. The government interventions were limited when compared to other countries and they provided limited results. Thus manufacturing was not the answer for either island as output and investment could only rise with increased trade, but the interwar period saw a steady increase of protectionist barriers. Without growth in regional trade the small size of the islands a disadvantage, as the demand for industrial

[60] Georghallides, *Cyprus and the Governorship…*(1985) p.292
[61] Cyprus, *Statistical (Blue) Book 1928* (Nicosia: GPO, 1929) p.366
[62] National Archives, London. File: CO161/121, "Report of the Commissioner of Labour 1930-1931", p.Y5
[63] Feinstein, Temin & Toniolo, *The European Economy…* (1997), p.81
[64] Cyprus, *Report... into the System of Taxation in Cyprus* (1930) p.8
[65] National Archives, London. File: CO161/122, "Report of the Commissioner of Labour 1932-1933", p.S4; Greaves, *Report on Economic Conditions…*(1935), p.21.

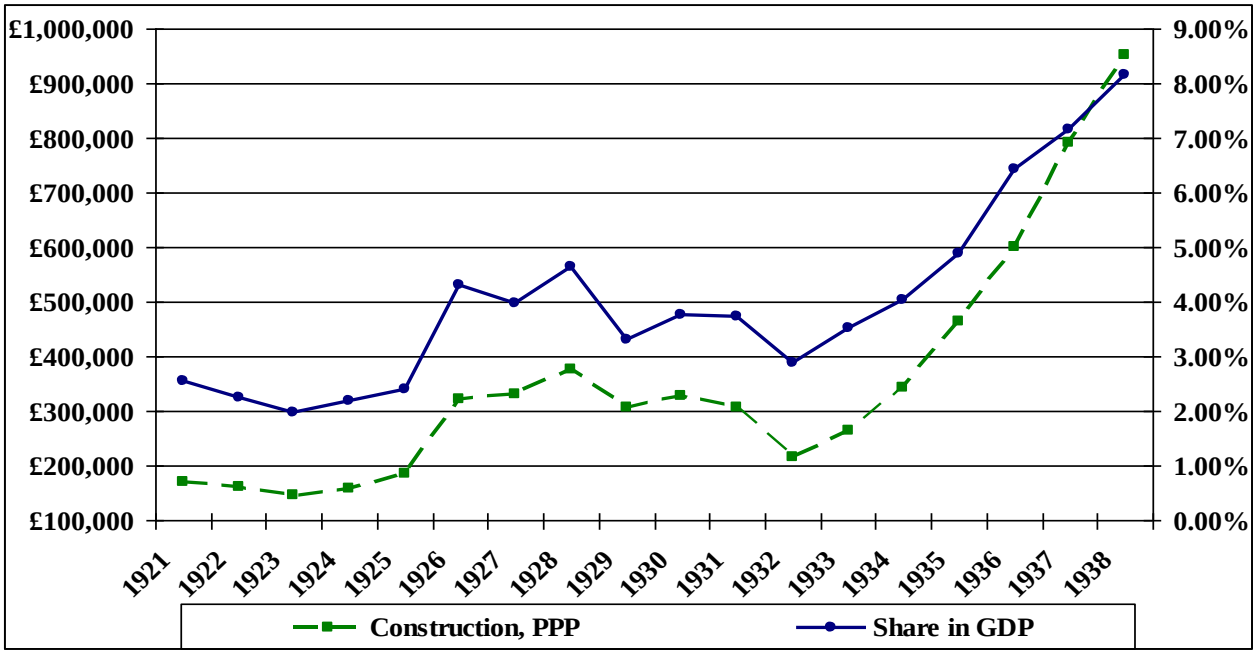
products was not enough for private investment in the new industrial processes; only with the liberalisation of trade after the Second World War could the islands manufacturing industry be modernised.

Construction output

The relatively poor performance of the manufacturing sector on the islands was in contrast to the experience of the construction industry. The growth of construction was spectacular for both Cyprus and Malta as construction output doubled as a share of GDP. Table 6.5 shows the development of Cypriot construction in the interwar period, which can be separated into three phases. From 1921 to 1925 the construction sector was largely stagnant. There was a jump to a higher level of activity, followed by a prolonged period of slow growth until the depression led to a drop in construction activity in 1932. The sector recovered rapidly from the depression, since by 1933 a construction boom took place in Cyprus with an annual average growth rate of 28% for the period 1932-1938. The overall growth for the period 1921-1938 was very rapid, with an annual average growth of 10.7%.

The growth in the 1930s was as spectacular as the growth of mining, making construction one of the most dynamic sectors of the Cypriot economy. Out of the 22,270 dwellings constructed during the period 1921-1938, 55.4% were built in the last six years. The rapid expansion of output in the late 1930s was linked to the rapid urban expansion in Cyprus: 81.4% of all urban houses built during the interwar period were constructed between 1932 and 1938.

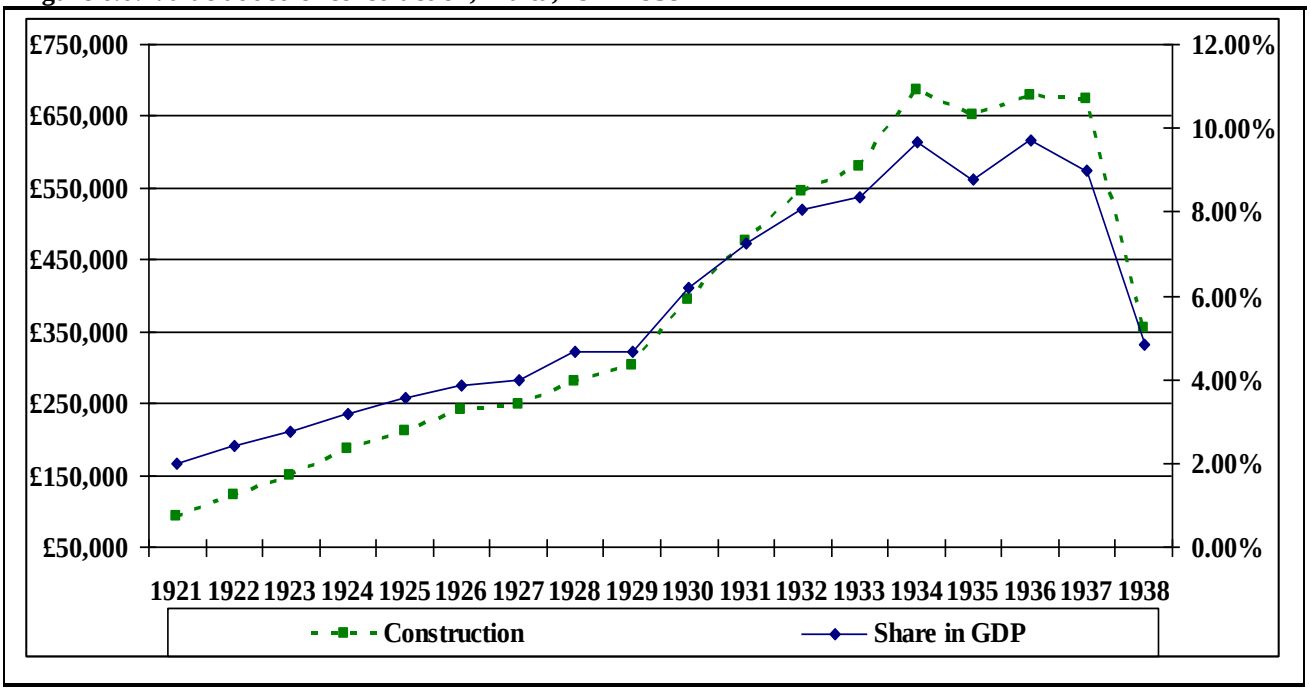
Figure 6.5: Value added of construction, Cyprus, 1921–1938



Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted).

Growth in the Maltese construction industry was similarly rapid, with the industry being the most dynamic in the interwar economy. Table 6.5 indicates the rapidity of construction growth: despite being much smaller than Cyprus in terms of population and geographical size, Maltese construction output outstripped Cypriot construction from 1930 to 1936, despite being a much smaller economy. Figure 6.5 indicates that there were three stages in the development of the interwar Maltese construction industry. Growth was steady until 1929, and then accelerated rapidly until 1934. Surprisingly, the construction sector was not affected by the great depression: output kept increasing throughout the global downturn. The industry reached a plateau and subsequently experienced a very sharp output reduction in 1938, with value added declining by 47.2%. This recession in construction was deep, wiping out the gains in output made in the 1930s. The annual average growth of the Maltese construction industry prior to the 1938 decline (i.e. for the period 1921-1937) was 13.2%. The sharp reversal in 1938 was partly due to a reduction in public construction: public construction value added fell from £200,967 in 1937 to £94,753 in 1938. At the same time the weakness of Malta's strategic position, exposed during the Abyssinian crisis in 1936, made investors reluctant to continue building as the clouds of war thickened prior to the Munich conference in September 1938.

Figure 6.6: Value added of construction, Malta, 1921-1938



Note: In constant 1938, PPP, pounds sterling. Source: Appendix C.

The construction in Malta was centred in the areas of Sliema and St-Julian. These areas were previously just beyond commuting distance of the Grand Harbour urban area. By the end of the 1930s they were completely transformed since buses allowed faster communication with the main urban areas: over 62% of new housing was constructed in the suburbs of existing urban areas, creating new urban areas radiating outwards from Grand Harbour. On the other hand, traditional urban areas experienced population decline as people flocked to better and more affordable accommodation in the suburbs: fewer than one hundred of the 11,008 houses constructed during the period were built in urban centres.

The rapid growth of construction brought lasting benefits to the economies of Cyprus and Malta. Table 6.6 indicates that construction industry rapidly raised its profile on the islands' economy, as it was one of the few industries were demand was fuelled by the increased population growth. The new houses and roads constructed increased the capital stock, which in turn increased output in terms of a higher rental income from housing and by the easing of transport bottlenecks. The construction boom that took place during the interwar period permanently shaped the appearance of the islands' cities: the iconic Phaneromeni area in Nicosia and the palm tree promenade of Larnaca were all constructed during this period, while in Malta the boom led to the apartment blocks and the promenade road that links Sliema and St. Julian to Valletta[66].

[66] Bank of Cyprus Cultural Foundation, "110 moments in our History" http://www.boccf.org/main/default.aspx?mid=199&TabID=43&ItemID=226 as consulted 12 Oct 2009; Fenech, *Responsibility and Power…*, (2005), p.270.

Table 6.5: Value added of construction of Cyprus and Malta, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	92,034	168,270	1930	394,718	328,581
1922	120,988	160,842	1931	474,906	305,654
1923	148,498	145,771	1932	543,857	216,168
1924	184,890	156,877	1933	580,259	264,183
1925	210,814	183,972	1934	685,005	342,373
1926	239,299	319,797	1935	650,832	462,326
1927	247,597	329,797	1936	677,922	599,481
1928	279,616	376,809	1937	673,733	791,404
1929	301,546	304,923	1938	355,449	951,438

Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted); appendix C

Table 6.6: Per capita value added of construction of Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Cyprus	Malta
1921	0.54	0.43	1930	0.96	1.65
1922	0.51	0.56	1931	0.88	1.97
1923	0.46	0.68	1932	0.61	2.22
1924	0.49	0.84	1933	0.73	2.34
1925	0.57	0.94	1934	0.93	2.72
1926	0.97	1.06	1935	1.24	2.55
1927	0.99	1.08	1936	1.58	2.62
1928	1.12	1.20	1937	2.05	2.57
1929	0.90	1.28	1938	2.42	1.33

Note: In constant 1938, PPP, pounds sterling. Source: Table 6.5, Table 3.2.

The principal reason for the rapid increase in housing construction was the population pressure on the existing housing infrastructure, particularly in and around cities. In chapter 3 it was seen that the decreased migration opportunities led to increased population growth: this exerted pressure on the existing housing stock of Malta and Cyprus. The housing stock in 1921 was already under pressure as the First World War put a halt to construction while the war increased profits. This combined with the growth of population, created great demand for housing, especially in Malta. Population pressure increased the demand for housing even in rural areas during the interwar period.

The demand for new houses was even greater in urban and sub-urban areas. In cities there was a need for new housing as many household improvements that were becoming the norm in the interwar period (such as running water, kitchens and plumbing) could not be installed in old buildings without additional cost. This combined with the ability to introduction of commuting due to the arrival of motor vehicles led to the rapid expansion o f sub-urban areas described below.

Table 6.7: Yearly growth in construction, Cyprus and Malta, 1921-1938.

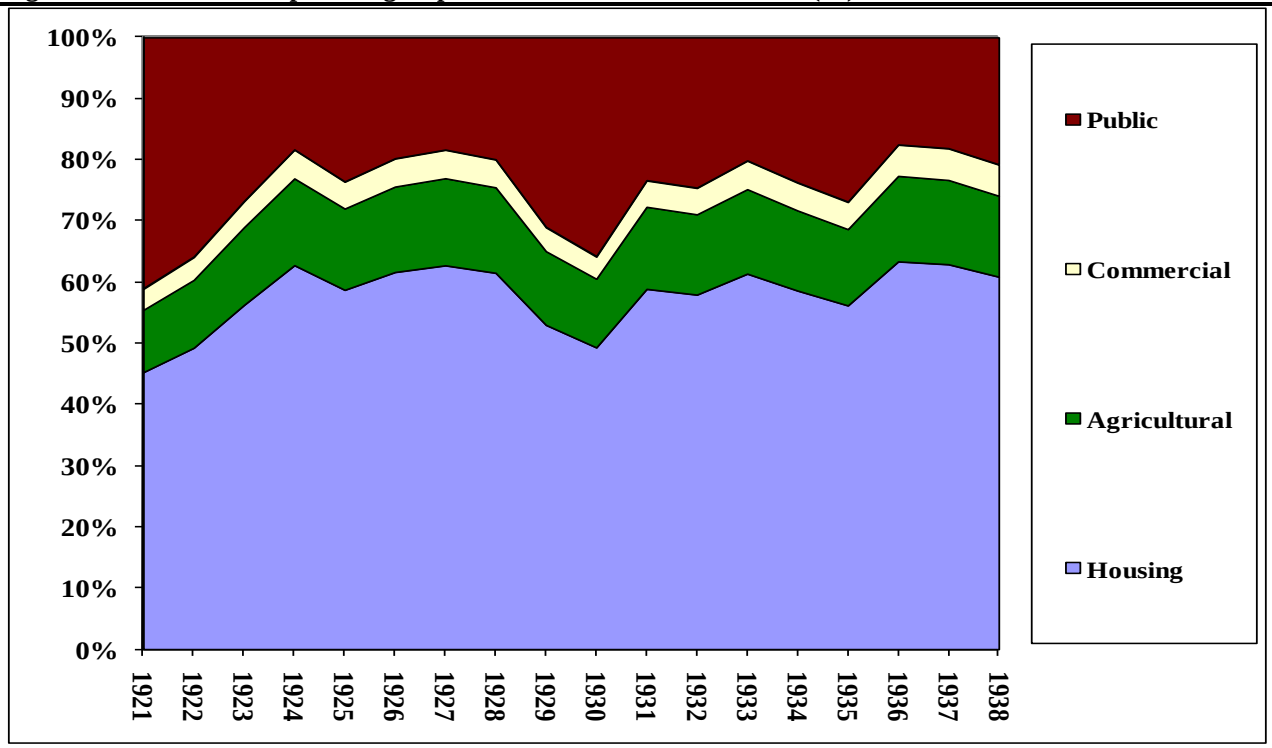
Year	Malta		Cyprus	
	Value added (%)	Per Capita (%)	Value added (%)	Per Capita (%)
1921–1922	31.5	29.8	-4.4	-5.5
1922–1923	22.7	21.2	-9.4	-10.4
1923–1924	24.5	22.9	7.6	6.4
1924–1925	14.0	12.6	17.3	16.0
1925–1926	13.5	12.1	73.8	71.9
1926–1927	3.5	2.1	3.1	2.0
1927–1928	12.9	11.5	14.3	13.0
1928–1929	7.8	6.5	-19.1	-20.0
1929–1930	30.9	29.2	7.8	6.6
1930–1931	20.3	18.8	-7.0	-8.0
1931–1932	14.5	12.9	-29.3	-30.5
1932–1933	6.7	5.2	22.2	20.1
1933–1934	18.1	16.4	29.6	27.4
1934–1935	-5.0	-6.3	35.0	32.7
1935–1936	4.2	2.7	29.7	27.5
1936–1937	-0.6	-2.0	32.0	29.8
1937–1938	-47.2	-48.0	20.2	18.2
1921–1938	8.3	6.8	10.7	9.0
1921–1929	17.6	16.1	7.7	6.5
1930–1938	-1.3	-2.7	14.2	12.4
GDP Peak to Peak (1925-1937)	10.2	8.7	12.9	11.3

Note: In constant 1938, PPP, pounds sterling. Source: Table 6.5.

Figure 6.7 divides the value added of construction of Malta in four constituent parts: public construction, commercial building construction, agricultural building construction and housing. Fenech argues that public construction projects, such as the construction of a new general hospital and the development of the "Harper area", primed the building boom in Malta[67]. Figure 6.7 indicates that public construction was indeed a very important part of the industry, and credit is due to the Maltese parliament for financing substantial construction projects in an attempt to kick-start the economy in the early 1920s. The proportion of public construction to total output peaked at 77.2% in 1921, but gradually declined as housing construction took off in the suburbs. The sharp drop in output in 1938 was due to a reduction in output in all sub-sectors of construction activity, including government, thus leaving the relative shares in terms of value added unchanged.

[67] Fenech, *Responsibility and Power…*, (2005), p.175, p.270

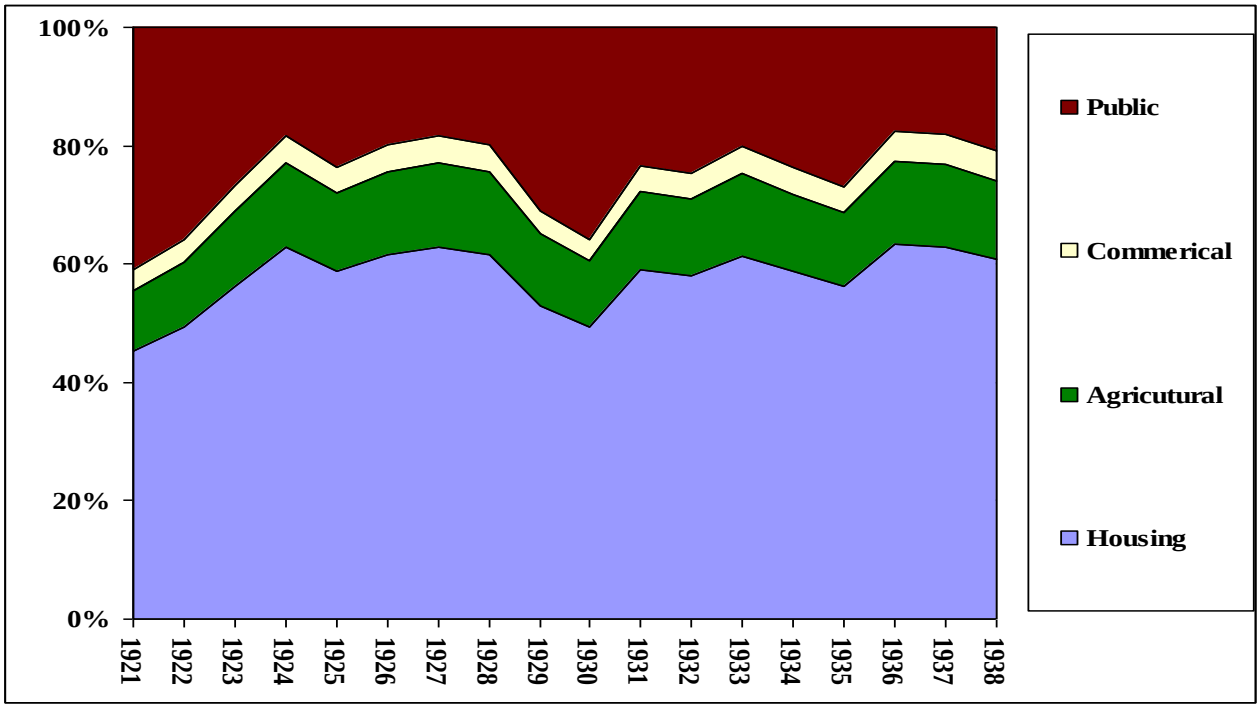
Figure 6.7: Construction per sub-group Malta, as share of value added (%), 1921–1938.



Source: Appendix C; appendix F; Malta, *Statistical (Blue) Books*, (1921-1938).

Figure 6.8 shows that there are similarities and some important differences between the Maltese and Cypriot construction industries. Agricultural buildings were more important in Cyprus than in Malta: in fact, the majority of Cypriot houses constructed were still located in the rural areas, as the rate of urban construction accelerated only slightly in the 1930s. Government expenditure on roads and public buildings was particularly important for Cyprus from 1921 until the middle of the decade. Yet the role of the Cypriot government was never as dominant as in Malta, with public construction reaching a peak in Cyprus of 36.2% in 1930. Substantial public projects were completed during the latter half of the 1930s by constructing a new governor's palace, an English School and the general hospital. As a result the absolute expenditure of the government increased from £59,039 in 1936, to £111,098 in 1938. Yet, the construction boom of Cyprus was mainly due to increased house building and less due to public expenditure.

Figure 6.8: Construction per sub-group, Cyprus, as share of value added (%), 1921–1938.



Source: Appendix B; appendix F; Cyprus, *Statistical (Blue) Books*, (1921-1938).

The introduction of motorised vehicles helped sustain the rapid increase in construction. Before the First World War, the transport links on the islands were limited, as explained in chapter 7. This aided the construction industry by lowering costs through the cheaper transportation of raw materials, but most importantly by bringing more areas around the cities within a commuting distance[68]. This was very important in Malta. Malta's cities had the highest urban concentration ratio in Europe, creating great problems in terms of hygiene. The population density around the Grand Harbour, comprising of Valletta, Floriana, Cospicua, Senglea and Vittoriosa, was 48,112 persons per square mile in 1921, with Valletta and Senglea registering 79,339 and 102,737 persons per square mile respectively[69]. The heart of the interwar economy of Malta was located in the Grand Harbour and without any cheap and efficient way to commute, the population needed to live as close to it as possible often in expensive and substandard accommodation [70].

Due to the overcrowding conditions, housing in the Grand Harbour area was expensive and unhygienic, forcing even well-off workers to live in slums[71]. Infant mortality in Maltese cities was one of the highest in Europe, and there were frequent outbreaks of disease, with an outbreak of

[68] National Archives, London. File: CO161/121 "Report of the commissioner for labour for 1930-1931", p.Y5
[69] Malta, *Census...1921* (1922), p.46
[70] Charlton. "Trends in the Economic…" (1960), p.164
[71] National Archives, London. File: CO161/123 "Report of the Public Health and Veterinary Department 1936-1937", Housing.

bubonic plague occurring in 1936[72]. The new dwellings in the Maltese suburbs were relatively inexpensive apartments with toilets and running water, providing well off labourers and clerks cheaper accommodation with better living conditions[73]. The population density of urban areas was not a serious issue in Cyprus, but the provision of modern amenities and cheaper accommodation did create a demand for new housing construction: as a result the number of persons per house in the urban area of Cyprus remained unchanged, despite a growing urban population[74].

The housing boom in Cyprus and Malta seems to add another piece of circumstantial evidence that the lacklustre economic performance impacted the population unevenly. The artisans and farmers were the clear losers since they faced the declining values of their products, and increased the pool of unskilled workmen, keeping real wages down. Yet they seem to have been clear winners in this period through investment in substantial property. In Cyprus the large debt to moneylenders led to forced sales of property: as a result some moneylenders made significant gains in land on which they constructed houses in order to acquire a steady supply of rental income[75]. Fenech argues that the large profits made by some in Malta during the First World War led to an accumulation of capital which was invested in the building of houses, as there were no other investment opportunities available domestically while investment abroad became troublesome in the turbulent monetary conditions of the period[76]. The lack of other investment opportunities, the speculative nature of the industry, and the fact that housing investment was considered a safe and reliable option at a time of global insecurity seemed to spur construction further[77].

[72] Infant mortality: Bowen-Jones, *et al*, *Malta: Background for Development* (1961), pp.178-179; Plague: National Archives, London. File: CO161/123 "Report of the Public Health and Veterinary Department 1936-1937", Incidence of Plague

[73] National Archives, London. File: CO161/124 "Report of the Public Health and Veterinary Department 1937-1938", p.253

[74] Christodoulou, *Inside the Cyprus Miracle…*(1992) p.113

[75] Oakden, *Report on the Finances* (1935) p.108; Christodoulou, *Inside the Cyprus Miracle…*(1992) p.113

[76] Fenech, *Responsibility and Power…*, (2005), p.270

[77] Christodoulou, *Inside the Cyprus Miracle…*(1992), p.114; Fenech, *Responsibility and Power…*, (2005), p.270

Labour productivity in the secondary sector

The census of occupation did not allow for a separation of manufacturing from construction workers as the relevant occupations seem to change definition from one census to the next. As a result there is an underestimation in workers in construction: as some builders were enumerated as carpenters and brick makers and thus classed in manufacturing[78]. In addition there is an issue of unspecified labourers, which are classed in the secondary sector: without additional information it is simply not possible to distinguish how many worked in construction rather than in manufacturing, handicrafts and utilities. Thus a joint estimate of value added per worker was made, which prevents a detailed discussion on the productivity differentials between these industries.

The estimates of output per worker are less robust than those of the primary sector since some of the estimation procedures used to estimate the output of manufacturing and handicraft production assume constant productivity. Therefore the results should be treated with caution.

Table 6.8: Value added per employee (Labour productivity), in the secondary sector 1921-1938.

	Cyprus				Malta		
	1921	1931	1938		1921	1931	1938
Manufacturing, Construction and Utilities	58.9	61.3	83.6	Manufacturing, Construction and Utilities	61.4	89.2	98.0
Total Output Productivity	41.4	44.8	58.3	Total Output Productivity	50.6	68.5	75.8

Note: In constant 1938 pounds sterling. Source: Appendix B (PPP adjusted) and Appendix C; Table 3.14.

Table 6.8 is a reproduction of table 3.15, focusing on the secondary sector. It indicates that the value added per worker in Malta was higher than in Cyprus, which is not surprising as Malta was relying less on handicraft output and more on the output of the Dockyard. The combined growth of value added of the secondary sector from 1921 to 1938 was 2.7% for Malta and 2.6% for Cyprus since the rapid growth of construction overturned the poor performance of the manufacturing, handicrafts and utility industries. The growth in value added after 1931 did not lead to an increase in employment in the sector as the total number of workers in secondary occupation fell in both Malta and Cyprus (Table 3.14). There was significant growth in value added per worker for the period 1921-1938: Malta's grew by 2.4%.and in Cyprus' by 2.0% but that suggests that the benefits of the increased productivity were shared by those in employment and their employers with the sector remaining closed to underemployed farmers.

[78] Maltese building workers numbered 602 in 1921 and 2,715 in 1931. These totals do not include general workers, which results in the separate estimate of productivity of construction at high and improbable levels for the period 1921-1931. Source: Malta, *Census…* 1921(1922); Malta, *Census...1931* (1932).

The growth of output per worker in Cyprus from 1921 to 1931 was just 0.8%, following the slow growth of 0.3% of the value added of the secondary sector. In contrast, Malta's productivity in that period was as rapid at 3.1% following the rapid growth of value added of the secondary sector at 3.9%. During the 1930s (1931-1938) the trend was reversed: Cypriot secondary sector productivity was faster, growing by 3.8% as the secondary sector value added grew by 6.1%, while Maltese secondary sector productivity grew at 1.5% per annum while output growth grew by 0.9%.

Due to the problems of the secondary sector the rapid growth of the value added per worker can only be partly explained. It is clear that the growth of construction took place without a great increase of the aggregate number of workers of the secondary sector. This creates two possible scenarios: either the manufacturing industry became more productive and shed workers to the construction industry, or the construction industry became much more productive and did not poach workers form the manufacturing industry[79]. Most likely a combination of these two scenarios took place: manufacturing and construction became more productive, while there was a shift of labour from manufacturing to construction. Without a breakdown of employment to its respective sectors no definitive answer can be provided.

However, the rapid increase in the value added per worker might not be just due to an increase in labour productivity. It may also be that the artisans working the manufacturing and handicraft industries who were faced with increasing competition from imports, reacted by extending their hours of work in an effort to maintain their income level, perhaps reducing the time they spent in other activities such as agriculture.

[79] Some of the productivity growth may have resulted from the introduction of new construction materials, such as Portland cement, that were relatively unused on the islands before 1921, thus increasing the labour productivity of the construction sector.

Chapter 7: The Service Sector

"So far as the writer is aware, no calculation has been made of the value of the presence of services, but it is obviously the dominating factor of the economy"[1].

It is relatively recently that the output of the service sector has been seen as important in the economic wellbeing of a developing nation. The pioneers of national accounting focused on estimating the secondary and primary sectors, as the development theory of the time argued that a sustained increase in income entailed a shift of resources from agriculture to manufacturing[2]. The service sector was considered to have a minimal potential for productivity increase and thus it was less important in development. The underestimation of the sector's significance was partly due to the difficulties in estimating service sector output[3]. Unlike the output of the primary and secondary sector, there was great ambiguity in which service activities should be in GDP: paid housework is considered part of GDP but own housework and DIY assembly are not.

Even if the services to be included in GDP were clearly defined, estimating service sector output presents serious challenges. It is sometimes difficult to measure output as for example in trade where the value added is part of the value of a product paid by the consumer. Other services are public goods that do not operate under market prices, while for some industries their output cannot be clearly defined: the correct method to measure the output of defence, healthcare and education still befuddles statisticians today. Output may not be measured in physical units, prices might not be profit maximising and it employee productivity is difficult to fathom. Previously HNA studies estimated the sector as a residual or assumed that the number of employees multiplied by their wages equalled the value added of the sector. As the importance of the sector was re-evaluated there have been changes in what is included and how it could be measured. Current practice includes an estimate of the implied income of houses, which was not originally included in the SNA and better methods of estimating the sector's output were devised[4].

It has not been possible to consistently use up-to-date methodology in this study in estimating the sector's output due to problems of poor data availability, yet the islands' implied rental income, trade, transport and communication industries, as well as the Cypriot banking sector were estimated

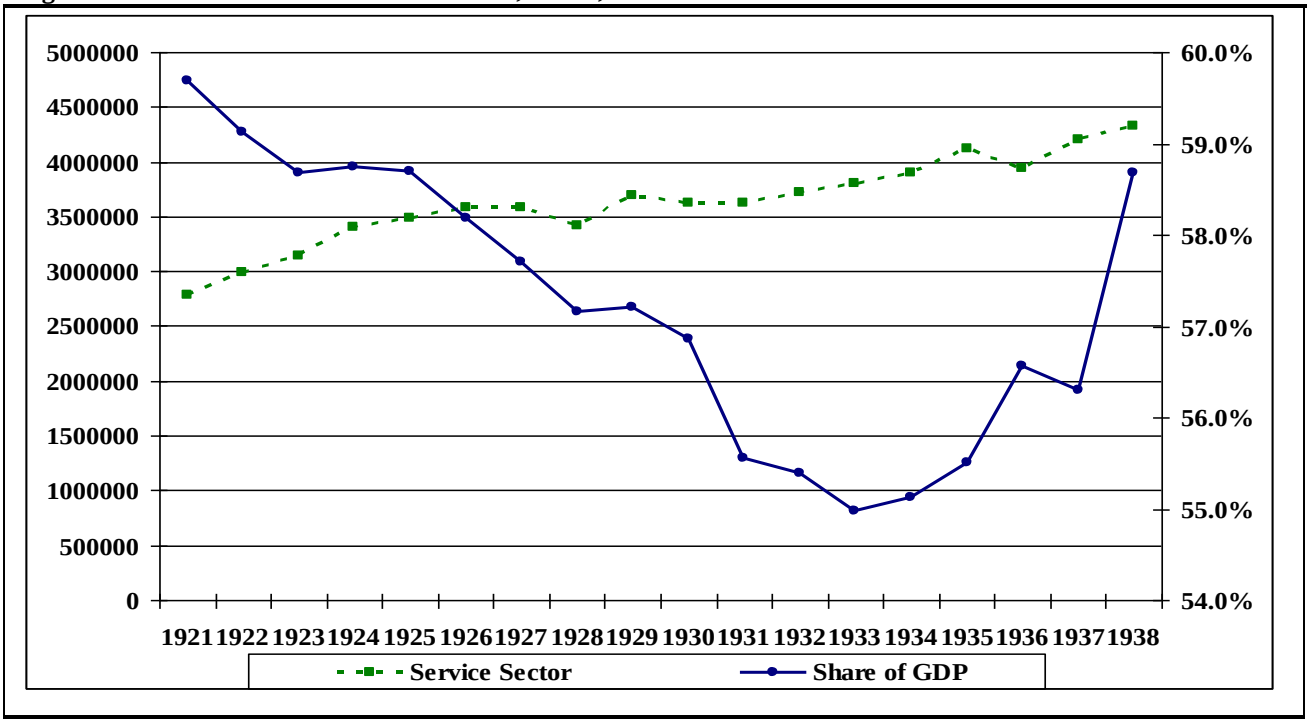
[1] Greaves, *Report on the Economic Conditions…* (1935) p.42
[2] Kuznets, *Modern Economic Growth*, (1966) p.6
[3] Lee. C., "The Service Industries" in Floud, R., and McCloskey, D., *The Economic History of Britain Since 1700 (Second Edition): Volume 2 1860-1939* (Cambridge, Cambridge University Press, 1994), pp.117-144, p.119
[4] Vanoli, *A History of National Accounting* (2005), p.249; Van Ark, "Towards European..." (1995) p.5, p.11

by adapting current best practise[5]. Due to the weakness of the underlying data, output in the service sector is the least robust. As a result the labour productivity of the sector is not provided because a great part of the service sector output was estimated based on wage and employment data, which assumes constant productivity, while the employment of the industries where output was directly estimated could not be established separately from total service sector employment.

Service sector output

The service sector was the most important sector of the Maltese economy, constituting 58.3% of the total economy in 1938. Yet as figure 7.1 indicates, the sector grew more slowly than the aggregate economy, resulting in a slight fall of its relative share to GDP. This slow growth was in complete contrast with its rapid expansion after independence in 1964, where transport, tourism and shipping were central to Malta's post-1945 success story[6].

Figure 7.1:Value added of the service sector, Malta, 1921-1938



Note: In constant 1938, PPP, pounds sterling. Source: Appendix C.

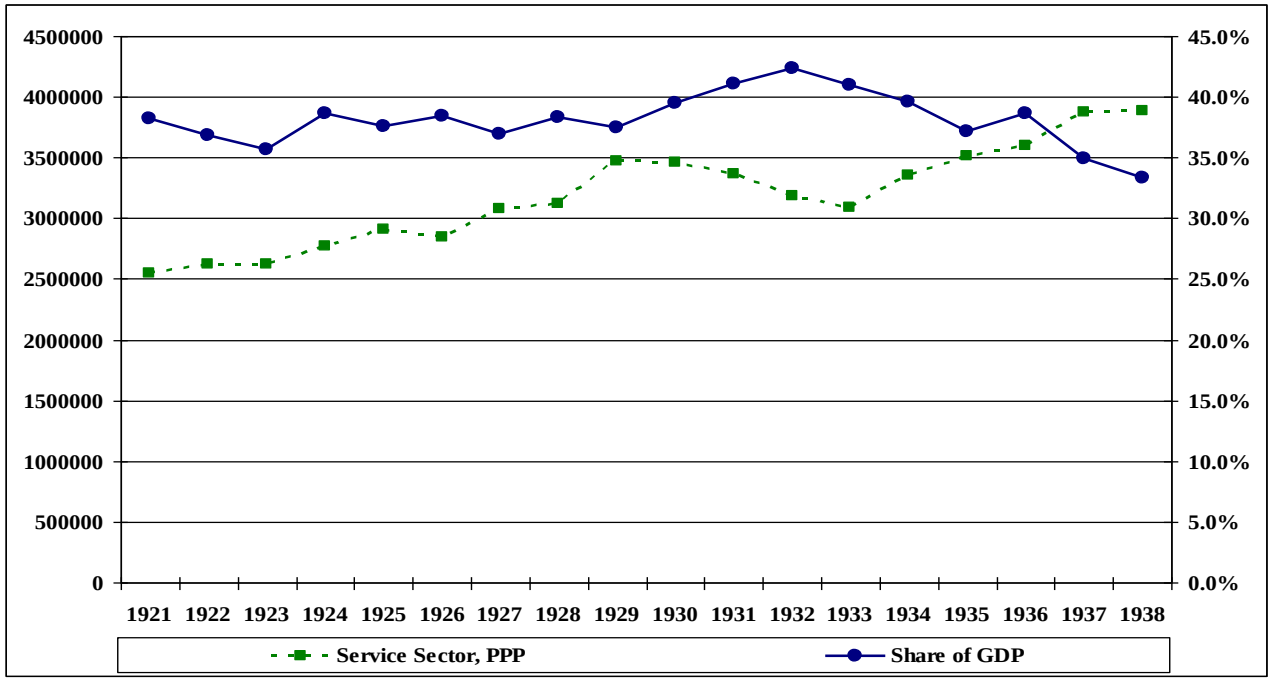
The performance of the Cypriot service sector is shown in figure 7.2. The growth rate was slower than the booming mining and construction industries, but faster than agriculture. As in Malta, the Cypriot service sector during the interwar period was underperforming when compared to post-war

[5]For the methodology see: United Nations, Department of international economic and social affairs, *Handbook of National Accounting, Series F, No.39: Accounting for Production: Sources and Methods,* (New York: United Nations, 1986), Chapter 6 and 7.

[6] Abela, *Malta, a Developing Economy* (1963), p.4, Metwally, *Structure and Performance…* (1977), p.16

growth. Growth in the period 1950-1959 was quite phenomenal, leading to the sector becoming pivotal in the successful post-war development of the island[7].

Figure 7.2: Value added of the service sector Cyprus, 1921-1938



Note: In constant 1938, PPP, pounds sterling. Source: Appendix C (PPP adjusted).

Table 7.1: Value added of the service sector, Cyprus and Malta, 1921-1938.

Year	Malta	Cyprus	Year	Malta	Cyprus
1921	2,785,927	2,542,917	1930	3,627,002	3,456,396
1922	2,985,613	2,621,837	1931	3,622,468	3,366,556
1923	3,145,958	2,623,358	1932	3,720,149	3,180,489
1924	3,397,289	2,772,318	1933	3,801,894	3,089,628
1925	3,491,483	2,906,040	1934	3,897,711	3,351,488
1926	3,588,070	2,848,820	1935	4,112,661	3,515,247
1927	3,574,404	3,076,588	1936	3,933,788	3,602,418
1928	3,416,825	3,123,409	1937	4,204,479	3,871,072
1929	3,692,966	3,466,769	1938	4,321,253	3,882,471

Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted); Appendix C.

Table 7.2: Per capita value added of the service sector, Cyprus and Malta, 1921-1938.

Year	Cyprus	Malta	Year	Malta	Cyprus
1921	8.18	13.13	1930	15.21	10.05
1922	8.34	13.88	1931	14.99	9.68
1923	8.25	14.44	1932	15.18	8.98
1924	8.62	15.40	1933	15.30	8.58
1925	8.94	15.62	1934	15.47	9.15
1926	8.66	15.84	1935	16.10	9.43
1927	9.25	15.58	1936	15.19	9.50
1928	9.29	14.70	1937	16.01	10.04
1929	10.19	15.69	1938	16.23	9.89

Note: In constant 1938, PPP, pounds sterling. Source: Appendix B (PPP adjusted); Appendix C; Table 3.2.

[7] Source: Republic of Cyprus, *Statistical Pocket Book…*, (1980).

Table 7.3 indicates that the service sector in the interwar period was not in crisis, but it was not a medium of rapid growth for the Maltese and Cypriot economies. There are similarities between the Maltese and Cypriot service sectors since both experienced faster growth during the 1920s.

Table 7.3: Service sector growth rates, Cyprus and Malta, 1921-1938.

Year	Malta		Cyprus	
	Value added (%)	Per Capita (%)	Value added (%)	Per Capita (%)
1921–1922	7.2	5.7	3.1	2.0
1922–1923	5.4	4.0	0.1	-1.1
1923–1924	8.0	6.6	5.7	4.5
1924–1925	2.8	1.4	4.8	3.7
1925–1926	2.8	1.4	-2.0	-3.1
1926–1927	-0.4	-1.6	8.0	6.8
1927–1928	-4.4	-5.6	1.5	0.4
1928–1929	8.1	6.7	11.0	9.7
1929–1930	-1.8	-3.1	-0.3	-1.4
1930–1931	-0.1	-1.4	-2.6	-3.7
1931–1932	2.7	1.3	-5.5	-7.2
1932–1933	2.2	0.8	-2.9	-4.5
1933–1934	2.5	1.1	8.5	6.6
1934–1935	5.5	4.1	4.9	3.1
1935–1936	-4.3	-5.7	2.5	0.7
1936–1937	6.9	5.4	7.5	5.7
1937–1938	2.8	1.4	0.3	-1.5
1921–1938	2.6	1.1	2.5	1.3
1921–1929	3.6	2.8	3.9	2.3
1930–1938	2.2	-0.2	1.5	0.8
GDP Peak to Peak (1925-1937)	1.6	0.2	2.4	1.0

Source: Table 7.1.

It is very difficult to compare the service output of Malta and Cyprus with other Southern European countries due to the different estimation procedures used. The exclusion of industries such as the implied rental income from housing can have significant effects on the growth rate, making cross-study comparisons difficult[8]. In general it seems that the slow growth of services' output seemed indicative of the Southern European periphery. Services output in Greece grew by 2.1% for the period 1921-1938, growing slower than the total economy[9]. The fact that the service sector was not a spectacular provider of economic growth during the interwar period is not just a South European phenomenon: the proportion of GDP growth accounted for services in Britain fell to a third in the interwar period[10].

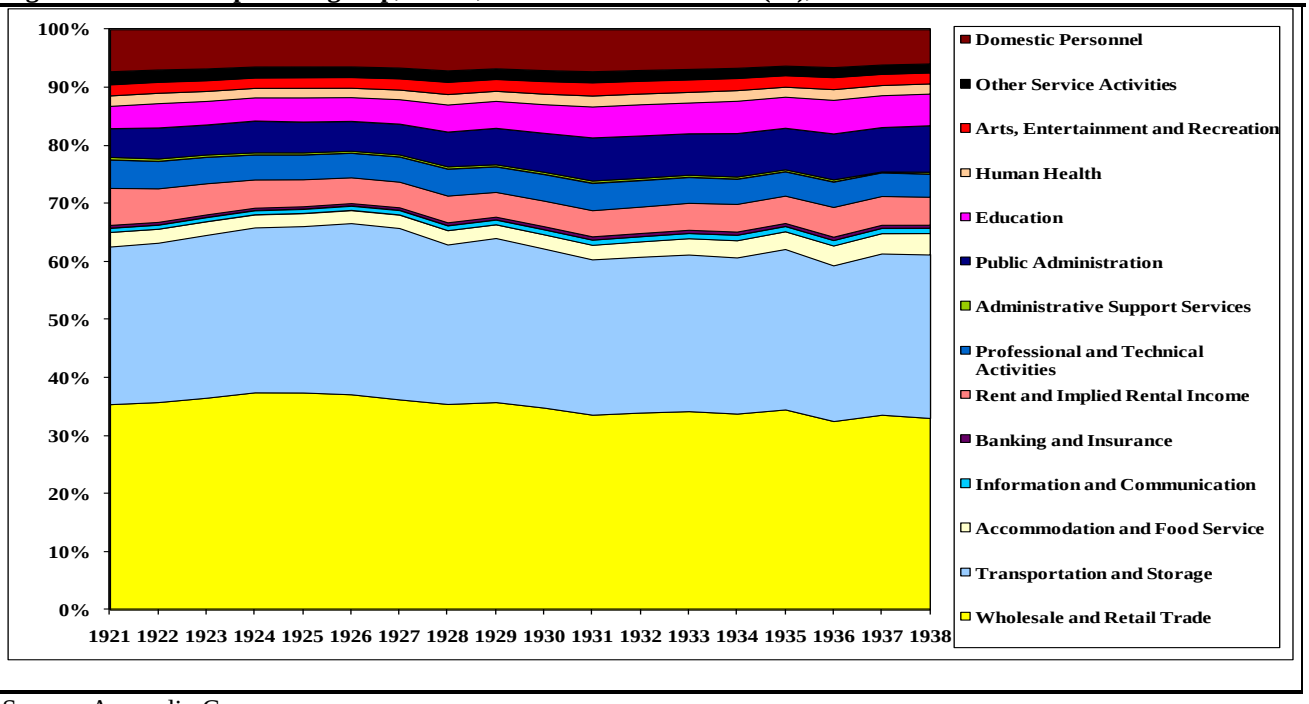
The service sector of Malta is divided into industries in figure 7.3. It must be noted that the section of public administration indicates the size of the administration rather than the full scope of

[8] For example Ivanov could only estimate the implied rental income of city dwellings due to the lack of data. Source: Ivanov, *Bulgarian National Income* (Unpublished)
[9] Source: Kostelenos, *et al*, *Ακαθάριστο Εγχώριο Προϊόν* (2007), "Appendix".
[10] Lee, "The Service Industries" (1994) p.143

government expenditure, which is presented in chapter 8. The expenditure of the Maltese administration in wages more than doubled during the period, rising from £138,061 in 1921 to £347,144 in 1938. Yet public administration remained a small section of the economy at 8% of GDP in 1938. The education sector increased its output both relatively and absolutely in the effort of the Maltese self-government to increase primary education.

The largest service industries in Malta were trade (domestic and foreign) and transport, constituting 33% and 29.3% of the total service output in 1938 respectively. The aggregate economy of Malta was little affected by the great depression, but these industries were seriously affected with output declining yearly from 1926 to 1931. Personal services relating to the presence of the British armed forces formed a high proportion of the sector's employment but were less important in terms of output due to the low wages of those employed. Employment in personal and domestic services remained high in Malta, despite the fact that such occupations were declining across Europe during this period.

Figure 7.3: Services per sub-group, Malta, as share of value added (%), 1921-1938.

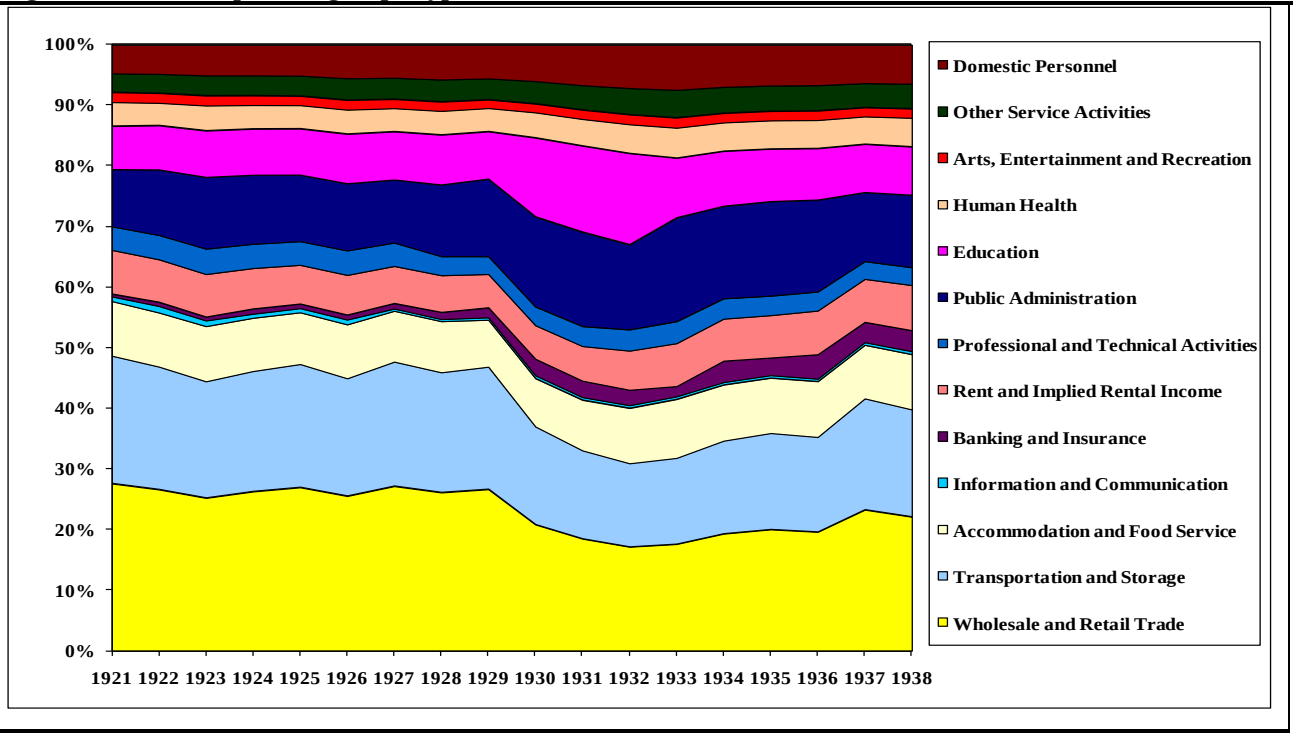


Source: Appendix C.

The service sector of Cyprus is divided into industries in figure 7.4. Public administration in Cyprus held a larger share of the service sector due to the fact the Cypriot service sector was much smaller than in Malta. Expenditure on government administration increased rapidly, rising a peak of 15.1% of total services output in 1928, but falling to 11.9% by 1938. The banking industry grew from £11,237 in 1921 to £134,735 in 1938 in PPP constant pounds sterling. As a result the banking

industry grew from 0.8% of the service sector value added in 1921 to 6.2% in 1938, confirming that the interwar period was a seminal period for Cypriot banking development.

Figure 7.4: Services per sub-group, Cyprus, as share of value added, 1921–1938.



Source: Appendix B.

The rapid growth of banking output was partly because of the success in attracting new depositors that were previously excluded from the formal banking market by the emerging domestic banks[11]. The growth of formal banking was matched by the expansion of co-operative banking, since the number of co-operative societies rose from 25 in 1925 to 224 in 1932[12].

[11] See: Apostolides. A., and Gekas, A. "Banking Expansion, Success and Failure in the British Mediterranean; The Ionian Bank 1840s–1920s" in Tortella, G., Consiglio, J., Martinez-Oliva, J.C., (eds.) *Banking in the Mediterranean: A Historical Perspective* (Ashgate Publishing, Forthcoming)

[12] See: Chapter 3 pp.114-115.

An analysis of the service sector's performance

The increasing importance of the service sector in the modern economy has led to a re-evaluation of its role in economic growth: growth could also be sustained by shifting service employment towards high productivity market services[13]. Market services create value added directly through the market and do not rely on government payments, unlike non-market service industries which are in part reliant on taxation revenue.

Trade was one of the most important market services in Malta and Cyprus and its output was affected by the global volatility, especially in the 1930s. The 1930s resulted to the virtual elimination of Malta's role as an entrepôt. During the middle of the nineteenth century, Malta became an important entrepôt and coal bunkering station for the traffic to and from the Suez Canal, but by the beginning of the twentieth century Malta's role was eroded as shipping technology improved and competition increased[14]. The First World War interrupted trade and the volume of Maltese re-exports in 1921 did not recover the pre-War level[15]. The depression caused a further decline and as a result Maltese re-exports in 1938 were still 58% of the 1921 level[16]. The decline in re-exports led to a decrease of shipping traffic in the harbour, reducing the output of coal bunkering services.

The previous chapters indicated that for the islands to have faster economic growth this would need to take place through the service sector. This is especially true for Malta, since it had limited agricultural land, it was devoid of resource endowments, and because industrialisation was very difficult for small islands during a time of rising protectionism. Service sector output is not as reliant on raw materials, while market size is less of a disadvantage for market services. In addition, the service sector could capitalise on an abundant resource of people. Yet the islands' service sectors could only achieve higher growth rates during the interwar period through modernisation which would entail a move away from the 'counting house' and step towards the 'modern office'. The 'counting house' describes a diverse mercantile operation, where insurance, trade and banking were carried out without any specialised equipment or skills and without any division of labour. The employee in a 'modern office' is specialised and focuses in providing services for the mass market by providing a high volume of transactions with a low profit margin, thus maximising labour

[13] Broadberry, S. *Market Services and the Productivity Race, 1850-2000: Britain in International Perspective*, (Cambridge: Cambridge University Press 2006), p1,.3.
[14] Castillo, *The Maltese Cross* (2006) p.129
[15] Charlton. "Trends in the Economic…" (1960), pp.71-73
[16] See: Chapter 3, p.64, Table 3.6; Bonnici, & Cassar, *A Chronicle of...* (1994) p.67

productivity[17]. The shift to the 'modern office' was well under-way in Europe during the interwar period but it was difficult for Malta and Cyprus to adopt such practises as their low per capita income limited the demand for modern services[18]. As a result merchants did not specialise and attempted to achieve a high profit margin on a low volume of transactions. In Malta the baker Blackley was also a broker, as well as packer and exporter of oranges, while the Tagliaferros were bankers, grain merchants and ship chandlers as well as real estate operators[19].

Cyprus and Malta were labour abundant economies but the transition to the 'modern office' was limited by the low levels of human capital accumulation. Specialised staff needed high levels of education to capitalise on communication, organisation and management technology, while sufficient literacy was necessary by the consumers in order for mass market services to be accepted and understood. As a result, investment in human capital was an important factor in the increase of the labour productivity in services: the expansion of the service sector depended on the educational capabilities of an economy. However, Cyprus and Malta had high levels of illiteracy with 60.8% and 46.1% of the population over ten on Malta and Cyprus not being able to read and write in 1931[20]. Malta did have its own university which provided graduates in law and medicine, leading to more service professionals than in Cyprus, but in both countries the population density of skilled professionals was low with less than a one lawyer or notary for every 1000 persons; at the same time Malta had one priest for every 133 persons[21].

There were some attempts to increase the human capital of the population in Malta. Although primary education was not compulsory during the interwar period, the increase in students attending primary schools was rapid[22]. The representative bodies of the indigenous population in both Malta and Cyprus considered the high rate of illiteracy as a serious failing, and increased funds for primary education[23]. However, any increase of human capital entails a time lag; as a result, the introduction of compulsory education in Cyprus in the 1920s enabled the modernisation of the service sector after the Second World War: by 1946 both islands had a young population with a higher ability in reading, writing and numeracy than ever before.

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[17] Broadberry, *Market Services and the Productivity Race* (2006) p.5, 3.

[18] Greaves, *Report on Economic Conditions…*(1935), p.3, p.25. It is also possible that the limited human capital of small countries also lead to the lack of specialisation in service industries: Farrugia, C. "The special working environment of senior administrators in small states" *World Development*, (1993) Vol.21, No.2, pp.221-226

[19] Bonnici, & Cassar., *A Chronicle of...* (2004), p.33; Consiglio, J.A., *A History of Banking in Malta*, (Valletta: Progress Press, 2006), p.54

[20] Source: Hart-Davis, *Census... 1931* (1932) Malta, *Census... 1931*, (1932)

[21] Source: Frendo, H., "Everyday Life in 'British Malta'", *Storja*, (1996), p.37–47, p.44

[22] Source: Malta, *Census... 1931* (1932) p.108

[23] Fenech, *Responsibility and Power…*, (2005), pp.259–260; Georghallides, *Cyprus and the Governorship…*(1985), pp.629-630

The rapid growth of the Cypriot banking sector provided the basis of rapid growth after the Second World War. The majority of credit in 1921 was in the hands of moneylenders who operated a low volume, high margin service that needed modernisation. Moneylenders were a diverse group often also being lawyers, general merchants and village storekeepers. They provided a valuable financial service to farmers, but they did so in a way that was expensive, wasteful and inefficient[24]. The farmer could be indebted for the rest of his life through a combination of high, and sometimes exorbitant, interest rates, while the moneylender was at risk of losing his capital if there were consecutively poor harvests that would leave most farmers unable to repay him[25].

Although moneylending was not eliminated, the financing of the Cypriot economy was transformed by the rapid progress of the banking and co-operative sectors. New domestic banks, employing Cypriot staff and resources, were created from the urban savings societies that were established before the First World War. Although initially small these societies were to be transformed into banks, two of which, the Bank of Cyprus and the Cyprus Popular Bank, are the largest banks in Cyprus today[26]. These domestic banks were very successful in attracting the deposits of a section of Cypriot society which was excluded from the formal banking sector: school teachers, urban housewives and professionals, entrusted their savings to domestic banks[27]. The growth of Cypriot domestic banks during the period was impressive. In 1920 Cypriot banks held £83,900 in deposits, constituting 18.8% of total deposits; by 1938 the domestic banks held £780,899, or 38.5% of total deposits[28].

Rural money lending was also minimised through the combined action of the credit crunch, the development of the co-operative sector and the debt settlement board established during the Second World War, as described in chapter 4. Although the co-operative societies did not operate with the 'for profit' motive, as were the moneylenders, their introduction did gradually lead to the modernisation of rural finance. Despite the co-operative societies' problems that were previously described, the co-operative sector was important in introducing hierarchical management in the rural credit market. In addition the structure of each co-operative allowed for specialisation: although related, the village co-operatives separated their functions between the credit societies, marketing societies and retailing societies. Most significantly, the co-operative credit societies

[24] Agastinotis, *Ο Συνεργατισμός* (1965), p.43
[25] Ibid. p.40-42
[26] Phylaktis, *The Banking System of Cyprus* (1995), p.10.
[27] Apostolides. A., "Foreign Banking Entry in Cyprus..." (2009)
[28] This was remarkable since 20% of total deposits were government savings that could not be held by Cypriot banks. Source: Phylaktis, *The Banking System of Cyprus* (1995), pp.10-11.

pooled the small amount of savings of each farmer, thus allowing for high volume, low margin loans for their members[29]. Consequently, the co-operative sector transformed the rural society in Cyprus: by 1958 about 50% of the island's agricultural produce were marketed through direct or indirect assistance from the co-operatives[30].

The transport industry underwent important changes during the interwar period through the diffusion of motor vehicles. Motor vehicles were scarce prior to 1921 and their introduction allowed for greater ease of transport and trade. The Maltese islands were very poorly connected in terms of transport before 1921, and as a result substantial regional price disparities still existed despite the small distances between villages. Despite Malta's small size, most goods were still transported by cart since Malta's narrow-gauge railway (just 7.5 miles long) that connected Valletta to Rabat did not carry freight[31]. The expansion of the urban area around the Grand Harbour increased the need to commute since the area was inadequately served by horse drawn carts and electric trams, supplemented by small boats and a steam ferry[32]. The introduction of automobiles led to the rapid creation of a comprehensive bus network that serviced the urban area. As table 7.4 indicates, the small size of the island and substantial investment by the government meant that the main motor roads were largely complete by 1930, and the Maltese road network was denser than Cyprus due to its small area. The small size of the island made bus services a cheap and rapid method of transport: by 1924 there were over 124 routes between Valetta and Sliema. In 1927 the government regulated the bus network, fares and schedule, leading to a complete network of services by 1932[33]. As a result the Grand Harbour economy was opened up to even the most remote parts of the island: farmers were able to sell their produce directly in the city rather than through middlemen, and up to 3,000 people commuted daily by bus from Luqa, Ghaxaq and Sliema to the dockyard in 1931[34]. The buses were an efficient way of providing transport, and as a result railway and tram services were terminated in 1931.

Table 7.5 indicates the number of vans and cars in Malta increased rapidly allowing for an integration of the domestic economy: The sale of commercially baked bread took place within 4 miles where it was baked in 1919, yet by 1932 the area of Qorrmi was providing bread to the whole eastern half of the island[35].

[29] Agastinotis, *Ο Συνεργατισμός ...* (1965), Chapter III.
[30] Mayer with Vassiliou, *The Economy of Cyprus* (1962), p.34
[31] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.120.
[32] Coase, A.S., "The closing of the Malta Railway" *The Railway Magazine* (1934)
[33] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.201
[34] Charlton. "Trends in the Economic…" (1960), Figure 25
[35] Bowen-Jones, *et al*, *Malta: Background for Development* (1961) p.219, Figure 32.

Table 7.4: Road network and density in miles, Malta and Cyprus, 1921-1938.

Malta					Cyprus					
Year	1st Class Road	2nd Class road	Total	Road Density: Area / Road	Year	1st Class Road	2nd Class road	Village	Total	Road Density: Area / Road
1921	269	114	383	1.95	1921	174	117	803	1094	0.19
1925	270	114	384	1.96	1925	187	117	879	1183	0.21
1929	287	119	406	2.07	1929	189	117	970	1276	0.22
1934	290	121	411	2.09	1934	665	212	2030	2906	0.51
1938	379	93	472	2.40	1938	670	196	1716	2581	0.45

Note: First Class Road was suitable for all weather; Second class road was impassable during bad weather, and village roads were village dirt tracks. Sources: Cyprus, *Statistical (Blue) Books*, (1921 -1938); Source: Malta, *Statistical (Blue) Books*, (1921 -1938)

The introduction of a greater number of automobiles in Cyprus did not have as great an effect as in Malta. The road density (table 7.4) and number of vehicles per capita (table 7.5) were far higher in Malta. Cyprus was much larger and more mountainous, and despite the expansion of the road network several areas of the island were still poorly served. Yet the introduction of motor vehicles led to an improvement in transport connections: before their introduction there was just a narrow-gauge government railway that connected the island from the east (Famagusta) through the capital, Nicosia, and to the west (Evrykhou)[36]. The railway did allow ease of access for goods and passengers in between Famagusta, Morfou and Nicosia but the main axis of trade was south to north (Limassol-Troodos Mountains-Nicosia) and it was not served by the railway[37].

Table 7.5: Vehicles per capita registered in Malta and Cyprus, 1921-1938

Malta							Cyprus					
Year	Buses	Cars	Vans	Motor Cycles	Total	Vehicles/ Population	Year	Cars, Buses and Vans	Motor Cycles	Total	Vehicles/ Population	Active Driving Licence
1921	19	200	6	130	355	0.167	1921	21	224	245	0.079	N/A
1925	75	743	38	332	1188	0.531	1925	114	582	696	0.214	695
1929	428	1447	143	351	2369	1.006	1929	314	1500	1814	0.533	649
1934	567	2081	445	386	3479	1.381	1934	325	1872	2197	0.600	797
1938	611	3725	762	406	5504	2.067	1938	521	2702	3223	0.821	1160

Note: The Vehicles / Population were multiplied by 100 for presentation purposes.
Source: Malta, *Statistical (Blue) Books*, (1921 -1938); National Archives, Nicosia. Files: SA1/260/ "Annual report of the Police Commissioner" (1921-1938).

The introduction of vehicles in Cyprus enabled a greater interaction of the villages with the island's market towns. Greaves stated in 1935 that the "advent of good road enables them [the villagers] to visit the towns more frequently"[38]. The central highland of Cyprus was completely isolated before the introduction of automobiles: Bus services connected the villages with the market towns, leaving

[36] See the Appendix for a map of Cyprus, including the Railroad line.
[37] Christodoulou, *The Evolution of the Rural Land Use...* (1959), p.100.
[38] Greaves, *Report on economic conditions in…* (1935) p.3

in the morning and returning at night, enabling some villagers to acquire work in cities[39]. In the mountain villages of Pitsilia, the introduction of the bus service led to the breakdown of the exploitative relationship with the manager of the general store: the cost of transporting goods was reduced, enabled the co-operative society to establish its own retail shops by buying goods directly from the city of Limassol and selling their farming products directly to the city's merchants[40].

By 1938 Maltese traffic was transferred almost exclusively to motorised traffic, and yet non-motorised transport was still an important part of Cypriot traffic, as the number of registered horse drawn casts and pack camels were still significant at the end of the period[41]. Thus the transportation revolution was not yet complete in Cyprus, and it would only take place after the end of the Second World War. The communication lines connecting the island to the outside world were poor: Malta had up to ten liners visit the island per month, allowing it to have frequent mails to Europe, while Cypriot mail bound for Europe needed a 15 day turnaround due to the limited number of liners docking in Cyprus.

The industries in Malta that remained buoyant were those servicing the British military and their dependents. From the infamous "gut" area of Valletta to the washerwomen of the "three cities", the Grand Harbour area was geared to catering for the needs of the British sailors and officers. The naval dockyard was upgraded to accommodate the growing size of capital naval ships and as a result the naval personnel increased to over 21,000 persons, providing low income service employment for the inhabitants of the Grand Harbour area[42]. Towards the end of the 1920s, the number of naval personnel stationed in Malta rose as a result of the increase in ship size: thus the Royal Navy dominated all other arms of the military in terms of expenditure in Malta. The employment opportunities of the British naval base must not be underestimated: prostitutes, barmen, boatmen, seamstresses, tailors, washerwomen, photographers, petty vendors, and domestic servants earned their living by offering their services to naval personnel, and they all suffered when the navy left Malta for extended period of time[43]. These occupations were not particularly productive, rarely providing enough income to ensure a decent standard of living. In addition by 1938 many of these occupations became obsolete: ferries could take the seamen speedily to shore,

[39] Christodoulou, *The evolution of the Rural Land Use...* (1959), p.97.
[40] Interview with Georgios Kyprianou, Former secretary of the Agros Village Co-operative in the 1930s, 18th July 2008
[41] Cyprus, *Statistical (Blue) Book 1938*, (Valletta: GPO, 1939): "Enumeration of Animals"; National Archives, Nicosia. File: SA1/260/1938 "Annual report of the Police Commissioner".
[42] Castillo, *The Maltese Cross* (2006) p.136, p.133
[43] Ellul, M., "Maltese Imperial Mentalities: Subjecting the Maltese Mind to Imperial Rule" *Storja* (1998), pp.95-114 p.105

thus endangering the livelihood of the 1300 local oarsmen who had the monopoly right to bring men off the ships[44].

The development of the service sector in Cyprus and Malta was the key in their rapid economic growth in the second half of the twentieth century. Yet in order for the market services to become more productive, modernisation from the 'counting house' to the 'modern office' had to take place. This did not occur evenly during the inter war period: a large part of the sector in Malta was catering for the British military's needs, resulting in many and low income employment. Thus during the interwar period the growth of the sector was not rapid enough to counter the slow growth of agriculture and manufacturing, with the output of trade declining due to the global volatility. Nevertheless finance, education, healthcare and transport underwent substantial changes during the interwar period that underpinned the rapid economic growth after the Second World War.

Improvements in transport due to the mass introduction of motor vehicles provided benefits throughout the economy while the Cypriot banks created a strong deposit base within the local population. The rural co-operatives, after a disastrous beginning, began the breakdown of the money lending system by successfully pooling together the farmers' meagre savings. All of these changes that took place during the interwar period were the foundations on which rapid economic growth was achieved after the Second World War. The Maltese and Cypriot governments' increased expenditure in primary education ensured that the generation entering employment after the Second World War was better educated than ever before, thus increasing the human capital of the population. The creation of strong domestic banks in Cyprus and the establishment of a comprehensive bus system in Malta were the type of changes that raised the technical competence of their workforce and established firms with a business plan focusing on low margins and high volumes, showing the way for other market services to follow after the Second World War.

[44] Cassar, C., "Everyday life in Malta in the nineteenth and twentieth centuries" in Mallia-Milanes, V., (ed.) *The British Colonial Experience the Impact on Maltese Society* (Miverva Publications, The Free University of Amsterdam, 1988), pp.91-129, p.115

Chapter 8: The role of government in economic growth

"Developing economies that shifted to protection and inward-looking policies generally fared better during the Great Depression... [but] on the whole colonies of European Powers adhered more closely to the orthodox regimes".[1]

The thesis has up to now focused on the estimation and analysis of GDP for Cyprus and Malta. The new quantitative evidence confirms the poor growth suggested by some in the historical literature. The islands' economic performance was similar to other neighbouring states, whose performance was considered poor within a broader comparative European perspective. The lacklustre performance of Cyprus and Malta was surprising since, unlike independent Southern European states, the islands did not have to face substantial obstacles to their development due to the First World War. The reasons for the slow economic growth of Cyprus and Malta have been analysed in relation to the primary, secondary and tertiary sectors, where emphasis was given to the colonial responses to specific industrial problems. This chapter focuses on the overall role of the government and its impact on the islands' growth.

The actions of the government were not a panacea against the problems facing Cyprus and Malta: it has already been argued that the global trade conditions in the interwar period were not conducive to the development of the European periphery[2]. In addition Cyprus and Malta suffered from the disadvantage of being small island economies as global protectionism was on the rise. The economies also suffered from island specific problems which were not caused by the direct actions of their colonial government: Malta's growth was too dependent on British Military expenditure while Cyprus was facing an intractable agricultural crisis. Yet these problems could be partially alleviated by government action. The Turkish and Greek governments managed to promote economic growth through policies of autarky and increased government intervention in the economy, checking the fall of output during the depression and promoting post-depression recovery.

Unlike Greece and Turkey, the rigid enforcement of budgetary balance by the British colonial authorities in London meant that the colonial governments of Malta and Cyprus were left with very little room to manoeuvre. In addition even within this limited room the Cypriot and Maltese

[1] Pamuk & Williamson, *The Mediterranean Response…* (2000) p.321-322
[2] Ibid. p.63.

governments proved ineffective in tackling the main problems affecting the islands. The Maltese self-government could not impose its decisions on the British armed forces, which undermined the government's efforts for greater economic diversification. In Cyprus, the government's reluctance to limit wage expenditure in order to initiate policies requested by the legislative council set the stage for violent confrontation during the great depression. Being a British colony was a disadvantage during the interwar period, as the colonial authorities were reluctant in actively trying to alleviate the islands' problems.

The limited government efforts, combined with the worsening poor economic conditions during the great depression, led to increased political tensions. The local press was very aware of the interventionist developments in neighbouring countries and argued that the colonial governments' were not trying hard enough to alleviate the islands' problems[3]. The limited government intervention and the increased pressures created by the great depression led to the breakdown of order and the abrogation of the Cypriot and Maltese constitutions.

This chapter is separated in three sections. The first section focuses on government revenue and expenditure. The second looks at the efforts to diversify the Maltese economy by its self-government. The final section looks at the Cypriot colonial government and its relations with the Cypriots in the legislative assembly in an effort to understand the ultimate causes of the October 1931 riots.

Government revenue and expenditure

The governors of Malta and Cyprus were not independent actors in terms of economic policy: each had to follow directions from London. British governors could not decide on issues such as exchange rates, trade policy, government loans, development projects or budget shortfalls without first consulting the colonial office in London, which had to consult the treasury. This had important economic ramifications on the islands as tariff and exchange rate policy was being decided at an empire-wide level, far removed from the needs of Cyprus and Malta. In addition, colonial governors were expected to act within a framework of what was considered good colonial governance in London, where budget surpluses were more desirable than development[4].

[3] For example *Ελευθερία* had correspondents in Athens and Istanbul frequently reporting on the economic activities of their respective governments and criticising the lack of similar policies in Cyprus. An example: Anonymous, *Ελευθερία*, 12 Jan 1927, "Μια Σύγκρισις" [A comparison]
[4] Georghallides, *A Political…* (1979) p.162, p.16

Table 8.1 presents the revenue of expenditure. Government expenditure was more than the value added of the government in GDP since it included transfer payments which were not included in GDP. The growth of government revenue and expenditure in Malta and Cyprus were faster than GDP growth: Cypriot government revenue grew by an annual average of 5.4% and expenditure by 4.7% from 1921 to 1938, while Maltese expenditure grew by 3.6% and revenue by 5.0%. As a result government expenditure as a share of GDP in Cyprus increased from 11.1% in 1921 to 13.9% in 1938. The expenditure of the Maltese government in 1921 was exceptional as it received a British grant-in-aid of £250,000 in order to support the new dual administration system. Thus if one uses 1922 as the starting base for expenditure, Maltese government expenditure grew from 10.9% of GDP to 18.3% in 1938.

Table 8.1: Government revenue and expenditure as a share (%) of GDP, Cyprus and Malta, 1921-1938

Government Revenue						Government Expenditure					
Year	Cyprus	Malta	Year	Cyprus	Malta	Year	Cyprus	Malta	Year	Cyprus	Malta
1921	11.2	12.2	1930	13.8	14.0	1921	11.1	15.9	1930	15.2	13.9
1922	11.8	11.2	1931	15.8	14.5	1922	9.8	10.9	1931	16.1	15.4
1923	10.3	10.6	1932	18.1	14.3	1923	10.6	9.7	1932	17.8	14.2
1924	10.8	10.5	1933	17.7	13.4	1924	9.8	10.2	1933	16.5	13.6
1925	11.3	11.2	1934	16.3	15.4	1925	10.5	10.9	1934	15.2	15.5
1926	10.7	11.6	1935	16.9	15.8	1926	11.1	11.2	1935	16.1	14.5
1927	9.7	12.3	1936	15.7	17.1	1927	9.1	11.2	1936	14.5	17.5
1928	11.1	12.0	1937	15.4	16.3	1928	10.6	12.9	1937	13.4	16.8
1929	12.3	12.9	1938	15.6	17.6	1929	11.6	12.1	1938	13.9	18.3

Source: Table 8.2, Appendix B, Appendix C.

The rapid growth of government expenditure indicates that Cyprus and Malta followed the general European pattern of an increasing government sector despite the fact that they were colonies. The need for additional revenue caused friction, particularly in Cyprus, as additional government revenue raised without reforming the antiquated and inefficient tax system. The taxation system was based on farming taxes and import and export duties; property tax was a very small share of revenue and income tax was not levied. It was particularly regressive as it relied heavily on the taxation of staples such as petrol, flour, sugar, salt and tobacco as well as the taxation of pigs, trees and the tithe tax[5]. The reliance on trade and farming taxation meant that a trade recession reduced government revenue by more than the reduction of GDP. Thus the Cyprus government increasingly sought to raise additional taxation to fund its growing need of revenue during the great depression[6].

[5] Oakden, *Report on the Finances* (1935) pp.45-46

[6] The government argued that the Cypriot elite in the legislative assembly wanted to alter the system in order to avoid a shift of taxation on the urban upper classes; indeed the report of the commission on the tax system which included councillors rejected introducing income or property tax. Cyprus, *Report... System of Taxation in Cyprus* (1930) p.6

The local press argued that the rapid increase of government revenue and taxation should be accompanied by active government solutions to the economic problems of Cyprus[7].

Table 8.2: Maltese and Cypriot government revenue and expenditure, 1921-1938

Cypriot government revenue and expenditure in constant 1938 Cyprus pounds							
Year	Revenue	Expenditure	Budget Deficit / Surplus	Year	Revenue	Expenditure	Budget Deficit/ Surplus
1921	418,112	415,599	2,513	1930	677,372	747,559	-70,187
1922	471,461	393,196	78,265	1931	727,766	742,164	-14,397
1923	424,504	435,959	-11,455	1932	761,123	748,050	13,073
1924	435,785	393,591	42,194	1933	748,102	698,357	49,745
1925	489,381	453,850	35,531	1934	776,723	722,396	54,327
1926	444,797	463,148	-18,351	1935	899,557	853,725	45,832
1927	455,657	427,200	28,456	1936	824,552	760,560	63,992
1928	507,504	483,490	24,014	1937	956,656	835,170	121,487
1929	637,223	602,063	35,160	1938	1,023,230	908,024	115,206
Maltese government revenue and expenditure in constant 1938 pounds sterling							
Year	Revenue	Expenditure	Budget Deficit/ Surplus	Year	Revenue	Expenditure	Budget Deficit/ Surplus
1921	568,414	740,893	2,151	1930	893,621	891,719	1,902
1922	564,373	551,007	13,365	1931	951,430	1,009,406	-57,976
1923	568,739	518,793	49,946	1932	962,210	958,125	4,085
1924	607,922	587,160	20,762	1933	930,577	943,990	-13,413
1925	663,677	650,757	12,920	1934	1,094,026	1,100,731	-6,705
1926	715,941	688,108	27,833	1935	1,172,585	1,076,674	95,910
1927	765,607	691,920	73,687	1936	1,190,306	1,217,516	-27,210
1928	718,003	774,165	-56,161	1937	1,219,220	1,261,491	-42,271
1929	837,246	785,685	51,561	1938	1,301,858	1,349,297	-47,439

Note: Deflated using the CPI provided in appendix H. Source: Cyprus, *Statistical (Blue) Books*, (1921-1938) "Government Revenue and Expenditure"; Malta, *Statistical (Blue) Books*, (1921-1938) "Government Revenue and Expenditure"; Appendix .

Table 8.2 indicates that the Cypriot and Maltese colonial governments maintained a strict budget balance. The budget deficits were small and infrequent, being less than 1.5% of GDP in either island for the period 1921-1938[8]. Cyprus was in deficit for only four years during some of the most turbulent decades of European economic history, despite being so negatively affected during the great depression. The rigid enforcement of balanced budgets led to pro-cyclical government actions, as the government expenditure was substantially reduced as Cypriot GDP dipped in recession.

This is one of the greatest differences between the British colonies of Malta and Cyprus and the independent states of Greece and Turkey. Greece was forced to run substantial deficits throughout the interwar period due to the effects of continued war and refugee repatriation, while both countries were forced to look inwards after defaulting on their foreign debt. Despite the revulsion of the politicians in power, who would have preferred to maintain a balanced budget, the budget policy

[7] Clerides, *Ελευθερία*, 20 Jan 1923
[8] The deficits were financed by the colonies' reserve, held in London.

of Greece was anti-cyclical as politicians were forced to use government funds to respond to the economic problems facing the country. When Greece suspended the repayment of its international debt because of budget and balance of payments imbalances, the government maintained the budget deficit in order to alleviate the economic impact of the great depression as it feared that a failure to do so would lead to intensified civil strife[9]. As a result, Greece had just a mild recession during the period 1929-1933, followed by one of the strongest industrial recoveries in Europe during the period 1933-1939[10].

The colonial governments of Cyprus and Malta did not alleviate the economic impact of the great depression through budget deficits, nor did they reduce the size of government revenue demanded by the population, which kept rising despite the worsening economic situation. Unlike independent countries of the region, they were not forced to more radical measures when faced with the economic repercussions of the great depression on the indigenous population. This was due to the fact that colonies were expected to be self-sufficient. Balancing the budget was a key performance criterion for British governors in order to prevent the colonies from being a burden on the British taxpayer; as a result the colonies maintained a budget surplus while expanding the revenue of the government, even if the colonies were facing great hardship; this caused the Greek-Cypriot press to claim that the British were only interested in maintaining the government no matter the cost to the population[11]. This policy was not unique to Cyprus and Malta: the colonial government of India maintained harsh deflation policies, while maintaining tribute payments, despite the unpopularity of the policy by Indians[12].

Thus colonial governments did not face the same pressure as independent countries to alleviate the economic effects of the great depression. In fact the surplus collected by Cyprus and Malta was quite substantial. From 1911 to 1938 the total saved by the Cypriot government was £670,608 Cypriot pounds, of which £478,199 was transferred to the British treasury through the Turkish 'tribute' and through the mandatory contribution to imperial defence of £10,000 per annum that replaced it[13]. Malta's insistence on budget surpluses was not as great as in Cyprus, but still collected

[9] Mazower, *Greece and the Interwar*... (1991), p.198, Table 7.2
[10] Christodoulaki, "Industrial Growth Revisited..." (1999) p.30. For a detailed breakdown of GDP in Greece see: Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προϊόν* (2007)
[11] Meredith, "The British Government and Colonial Economic Policy, 1919–1939" (1975), p.485; Clerides, *Ελευθερία*, 30 July 1926
[12] Rothermund. *The Global Impact of the Great Depression* (1996) p.87, p.90
[13] The saved surplus was 10.2% of the GDP in 1938.The surplus in 1938 constant prices was £595,403; Source: Chapter 8, p.179. Table 8.2.

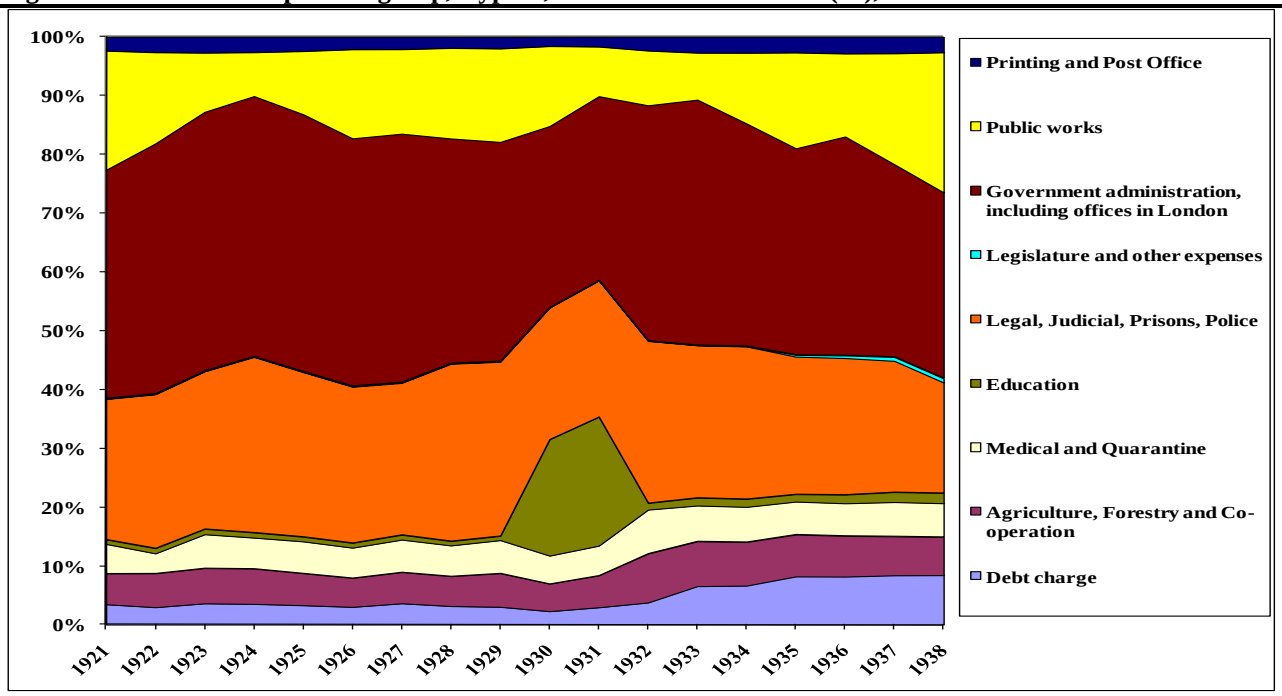
a Maltese surplus of £143,334 sterling in the period 1921-1938[14]. It is clear that larger budget surpluses in Cyprus were necessary in order for the island to pay the 'tribute', and the enforced surpluses were resented by the Cypriots[15].

The desire for substantial budget surpluses was a constraint that limited the available room for manoeuvre of the colonial governments during a crisis, especially since exchange rates and monetary policy were effectively controlled by London. It is not known what was the monetary policy towards the islands, but evidence indicates that London limited the money supply of the colonies leading to deflation throughout most of the interwar period[16]. This could have been the case in the islands as the consumer price index, shown in appendix H, indicates that the prices in Malta and Cyprus were strongly experiencing deflation from 1921 to 1933. The limitations on government economic initiatives due to the self-imposed fiscal restraints placed by the colonial government were resented by the local population, especially since the size the government revenue demanded that taxation was rising despite the dire economic situation.

Figures 8.3 and 8.4 indicate the value added of the government sector according to its use[17]. The tables are not exactly comparable to each other since the categories of expenditure in Cyprus and Malta could not be identically matched due to the differences in the two societies: the Cypriot church was separate from the state and thus its expenditure is not included in figure 8.1, while in Malta the church, education and some charities were partly funded by the government and are included in figure 8.2. Another problem is the mismatch of government educational expenditure: unlike Malta, the cost of education in Cyprus was charged to the communities, who paid additional taxation to establish their own independent educational systems, with the government partially subsidising this. As a result education in figure 8.3 represents the government subsidy and not total education expenditure.

[14] This constituted 1.9% of the GDP in 1938.The surplus in 1938 constant prices was £102,948. Source: Chapter 8, p.179, Table 8.2.
[15] Clerides, *Ελευθερία*,23 Dec 1922.
[16] See India and Africa: Rothermund. *The Global Impact of the Great Depression* (1996) p.90, p.124. The currency board of Cyprus might have exacerbated the need for budget surpluses, since the money supply (M0) of Cyprus pounds was based on the presence of an equivalent amount of sterling invested in London by the crown agents, creating a need for government surpluses to be invested in sterling.
[17] As it is a measure of value added the transfer payments within government expenditure are not included

Figure 8.1: Government per sub-group, Cyprus, as share of value added (%), 1921-1938.



Source: Appendix B; Cyprus, *Statistical (Blue) Books*, (1921-1938).

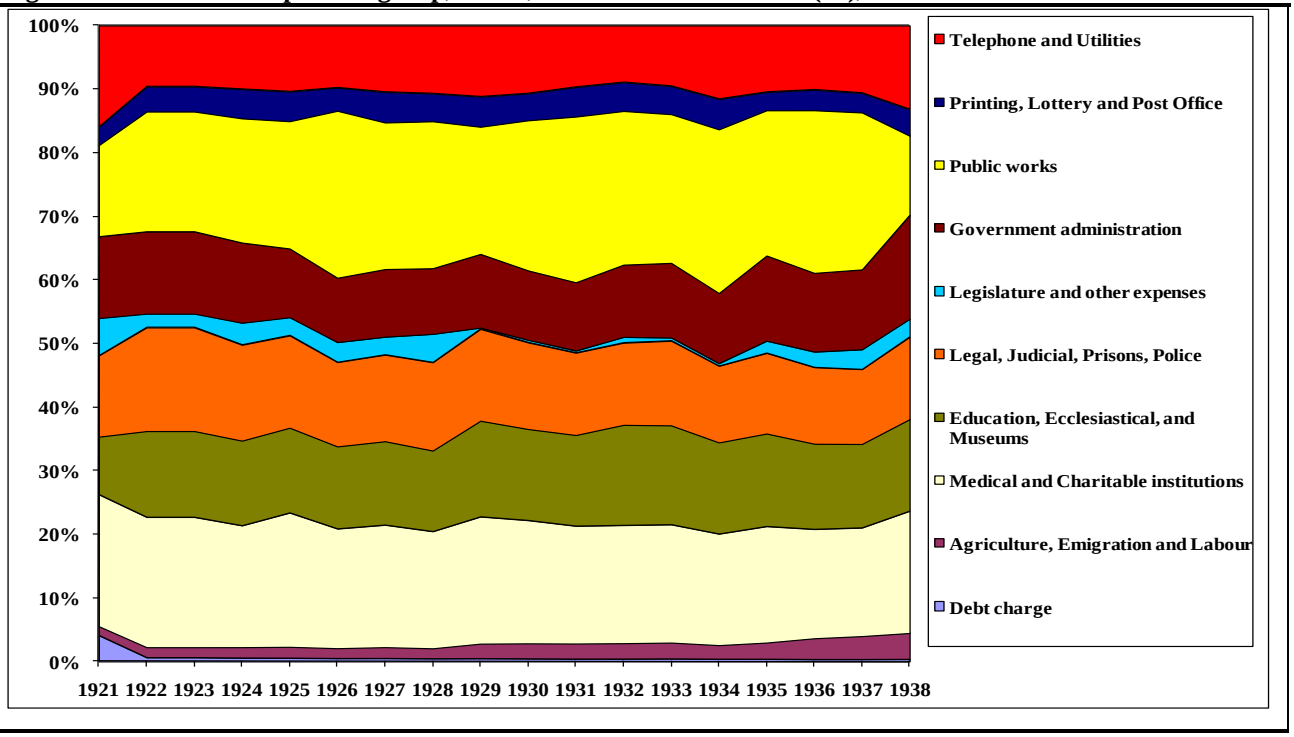
Figure 8.1 indicates that the largest share of the Cypriot government's value added were wages of government administrators. The expenditure on wages increased in absolute terms until 1930, then declined slightly and stabilised. Relative to government value added, the share of government administration peaked in 1927 at 41.2% and declined to 31.6% by 1938, which was lower than its starting level in 1921. Police and legal expenditure increased until 1931, reaching a peak of 30.2% of government value added, before being reduced to 18.9% by 1938. The expenditure on government sectors that provided technical competence to the economy declined during the 1920s, as the combined value added in the departments of agriculture, forestry, co-operation and public works decreased in absolute terms from 1921 to 1928. However they became increasingly important in the 1930s, representing 30.4% of the value added in 1938. Thus after 1931 there was a shift away from wages of bureaucrats and towards expenditure on public works and technical competence that could aid the economy.

The expenditure in education was very low, at just 1.8% of government value added in 1938: the weight of education expenditure was borne directly by the Cypriot communities[18]. This caused problems to the colonial authorities since their unwillingness to carry the cost burden of universal

[18] The jump in education relative to total government expenditure for 1930-1931 could have been due to the construction of the English School and thus it was not due to an increase in education expenditure, but because of increase in public works.

education allowed the Cypriots to use the education system as a focal point of their nationalism in a way that troubled the British administration[19].

Figure 8.2: Government per sub-group, Malta, as share of value added (%), 1921-1938.



Source: see appendix C; Malta, *Statistical (Blue) Books*, (1921-1938).

Figure 8.2 indicates that the Maltese self-government had different priorities as medical and charitable institutions were the largest share of governmental value added in 1921 at 20.7%, growing in absolute terms year-by-year. In addition the Maltese government was heavily involved in communication and utilities constituting 15.9% of the government's value added in 1921, an industry from which the Cypriot government was completely absent. Public work expenditure grew very rapidly until 1937, rising to 25.6% of the government's value added. Thus there was a greater emphasis of the government's value added towards welfare and service provision and less on government administration expenses. Although such expenses grew relatively and absolutely, the share of government value added remained much smaller in Malta than in Cyprus. The wages of government bureaucracy remained a smaller share of its value added suggesting that the existence of a representative domestic parliament may have resulted in greater expenditure on social issues and public works in colonial Malta than in colonial Cyprus. Yet the Maltese parliament was not a complete master of its own house: the next section focuses on the limitation of Maltese self-government and its failure in economic diversification.

[19] Storrs, R., *Orientations* (London: Ivor Nicholson and Watson, 1945) p.468; The demand for greater expenditure in education was particularly constant. Georghallides, *Cyprus and the Governorship…*(1985) p.115

Economic diversification and the Maltese self-government

Prior to the First World War the British record in administrating the crown colonies was poor, since "The crown colonies were not greatly considered in the imperial family. Occupied for a particular purpose and not much valued apart from it, they were left to shift as they could... progress of these colonies lagged and in the vast empire they drifted into the backwater"[20]. The governor would be under pressure from London only if the colony's administration failed to be financially self-sufficient or if a colony revolted: thus there was an incentive for administrators to avoid radical changes, as their consequences could be unpredictable, threatening the primary objectives of peace and self-sufficiency: a colonial governor's mandate focused on the need of stability over development, keeping institutional changes to the minimum[21].

During the interwar period there was a movement for change within the colonial office: some members believed in encouraging governors to initiate positive development measures, with an aim to forge the empire into a more prosperous and concrete whole[22]. The appointment of Leo Amery as secretary of state for the colonies strengthened the hand of these 'new imperialists'[23]. There was substantial resistance to such views within the colonial bureaucracy: as a result colonial officers who wanted more active development measures were not always successful, especially if such measures would involve British expenditure and thus necessitating approval from the British treasury. However, Amery sometimes succeeded in placing those who shared this point of view in key posts: he was instrumental in appointing Sir Ronald Storrs, as governor of Cyprus in 1926[24].

The situation that arose in Malta in 1919 provided a possibility for the 'new imperialists' to change the political structure of the island. Up to that point the British military commander-in-chief of Malta was also the civilian governor, with complete control. Maltese representation was limited to an advisory council of the Maltese elite (Church and landowners) with no decision making powers. As described in chapter 1 the demobilisation of the British armed forces after the First World War hit Malta particularly hard as the Royal Navy Dockyard dismissed half of the Maltese workers

[20] Benians, E.A., Bulter, J., & Carrington, C.E., (eds) *The Cambridge History of the British Empire: Volume III* (Cambridge: Cambridge University Press, 1967) p.128
[21] Hodge, *Triumph of the Expert* (2007) p.13
[22] Georghallides, *Cyprus and the Governorship…* (1985) p.118
[23] Hodge, *Triumph of the Expert* (2007) p.7, p.14, p.114; Oxford Dictionary of National Biography: L.S. Amery. http://www.oxforddnb.com/view/article/30401?_fromAuth=1 as consulted 21 Oct 2008. Amery expressed his views clearly and extensively in: Amery, L.S., *My Political Life: Volume 2* (London, Hutchinson, 1953) p.52
[24] Georghallides, *Cyprus and the Governorship…* (1985) p.5

without compensation[25]. These job cuts took place at a time of rapidly rising inflation, resulting in popular protests against British rule, which culminated in the bloody *Sette Giugno* riots in Valletta on the 7th of June 1919[26].

The riots convinced the colonial office that the political system in Malta led to the association of the Maltese economic hardship with British rule, thus fuelling nationalist opposition. It was felt by the 'new imperialists' that it was possible and desirable to decouple the use of Malta by the British military from the demands by the Maltese for the British to solve their problems. The plans for a new constitution that would increase Maltese representation in the decision making process were expedited in order to achieve this[27]. This new constitution was given to Malta in 1921. It provided for two governments: an imperial government, as represented by the governor, and a Maltese government, which had a chief minister and a cabinet who were elected by a bicameral parliament. It was intended that the two governments would have separate spheres of influence: The governor, who would be chosen by the military and was the commander-in-chief, had an absolute say in foreign relations, defence, defence infrastructure, navigation, external travel, and any matter that affected the British armed forces stationed on the island. The Maltese government would be responsible for all domestic affairs. The constitution was a departure from the traditionally colonial constitutions as it gave substantial decision making powers to the population of a crown colony. However in practise the pervasive presence of the British armed forces meant that the imperial government frequently intervened in domestic affairs to implement the wishes of the military[28]. The colonial office was successful in detaching the grievances over the economic conditions in Malta away from the British governor and onto the local Maltese politicians, but as we shall see the self-government was never given enough power to be able to successfully limit the island's dependence on British military expenditure.

The bicameral parliament gave the right to vote for the commons to men paying rent of £5, or having an income of £5, producing an initial electorate of 30,000 out of 212,258 Maltese [29]. Eligibility to vote for the senate was restricted to literate men paying £20 in rent or being of substantial property, leading to a very exclusive senate franchise[30]. The senate operated on the same principle as the House of Lords, but without the parliamentary right of the commons to overrule the

[25] Bonnici, & Cassar, *A Chronicle of...* (2004) p.74
[26] A detailed explanation of the riots is given in the discussion on the failure of the constitution. See: Command 2150, "Report of the Royal Commission on the Constitution of Malta" (1931)
[27] Fenech, *Responsibility and Power…* (2005) p. 38, 44
[28] Ibid. p. 51
[29] Source: Fenech, *Responsibility and Power…* (2005) p.57
[30] The increase of rents led to the enfranchisement of most adult males prior to the Second World War: Fenech, *Responsibility and Power…* (2005) p.57

upper house. The senate was made up of seventeen members, with only seven being elected. Eight senate seats were given to appointed representatives of the church, professional organisations, the nobility and the landowners. The colonial office introduced a new player in Maltese decision making by giving two seats to the trade union council, which was mainly composed of dockyard workers[31]. It was thought that the union senators would ensure a pro-British voice in the chamber, since the union movement's existence was dependent on the British Navy's goodwill. However, their presence in the upper house heightened the divisions between the Nationalists and the pro-British party, aggravating the polarisation that would lead to the dissolution of the constitution[32].

The Maltese parliament was divided into three main parties. The *Unione Politica Maltese* (UPM) were nationalists that looked to Italy, and were the largest group in the parliament[33]. On the other side was the Constitutional party which was staunchly British and pro-imperialist. The smaller Labour party became the coveted partner to both sides in order for the larger parties to be able to form a government. By the late 1920s the constitutional / labour party coalition which was in government was undermined by a legal ruling that declared the union movement representatives positions void, producing a hung parliament that could not pass legislation or approve the budget[34]. The Governor of Malta, seeing how the deadlock threatened the viability of the dual governance system, allowed the pro-British Prime Minister Strickland to pass laws using imperial orders-in-council, thus by-passing the will of the Maltese parliament[35]. This further exacerbated the fractious relationship between Lord Strickland and the Nationalist party, which was supported by the Church: during the run-up elections in 1930 the archbishop decreed that "you may not, without committing a grave sin, vote for Lord Strickland and his candidates, or for those, even of other parties, who in the past have helped and supported him"[36]. The announcement further heightened tensions between the two main parties culminating in the attempted assassination of the Prime Minister and the suspension of the constitution on the 26th of June, 1930. Thus the constitution was not a success in terms of creating a stable government. After its suspension, the governor reverted to ruling directly

[31] Amery, then undersecretary of the Colonial Office, stated that the unions and the Labour party were "the sanest and most helpful of the lot in Malta as well as inclined to be most genuinely British", as quoted in Fenech, *Responsibility and Power…* (2005) p.60, p.102. The unions were still not in a position of power vis-à-vis the dockyard since many unskilled dockyard workers were still non-unionised and were working on the basis of a daily pick.

[32] The labour peers who were supporting the legislation sent by the pro-British party were deemed to have taken their seats illegally. The pro-British government then began to pass laws and budgets through imperial orders-in-council, thus circumventing the nationalist parliament. This raised the political tension that led to the murder attempt against the prime minister. Fenech, *Responsibility and Power…* (2005)

[33] They were considered to be loyal to Britain: Fenech, *Responsibility and Power…* (2005) p.91

[34] Command 2150, "Report of the Royal Commission on the Constitution of Malta" (1931) p.854.

[35] Fenech, *Responsibility and Power…* (2005), p.310.

[36] As quoted in Fenech, *Responsibility and Power…* (2005) p.422

through imperial decrees and Malta remained without effective political representation until the Second World War.

Even in the sphere of domestic issues where the self-government could enact laws, its ability to enforce them was limited by the presence of the British forces. In the eyes of the Maltese parliamentarians, Malta's dependence on British military expenditure was both a blessing and a curse since they were aware of how such dependence caused the deep recessions of 1912 and 1919 when military expenditure in Malta was suddenly reduced[37]. Thus even during the nationalist and the constitutional parties' increasingly heated differences, in the Maltese parliament, there was a consensus that Malta needed to diversify its economy away from British military expenditure[38]. Both nationalist and constitutionalist governments attempted to encourage output in sectors which were not dependent on British military expenditure while maintaining the balanced budgets requested by London. The Maltese self-government created technical government departments for agriculture, migration (later replaced by an office of labour) and tourism[39]. However, figure 8.2 indicates that the expenditure of new departments only increased gradually, constrained by the lack of sufficient funds[40]. The need to maintain budget balance also led to the Maltese self-government attempts to promote manufacturing without government expenditure by the introduction of production monopolies as described in chapter 6.

The efforts of the Maltese government to decrease the island's dependence on the British Military were not effective partly due to the lack of funds caused by the need to maintain the budget in balance, and partly due to its remit being limited even in domestic affairs. The attempts to encourage economic diversity were checked by the decisions of the British military, which "tended to take the definition of Malta as a 'fortress' rather too literally, a taxing viewpoint given Malta's small territory and density of population"[41]. The imperial government, as commander-in-chief, always sided with the military in any disagreement the armed forces had with the self-government, thus nullifying the efforts of the Maltese parliament. Several examples indicating this are presented below.

[37] Bonnici & Cassar, *A Chronicle of…* (2004) p.57

[38] Fenech argues that such laws were passed to please the Labour party which held the balance of power in the parliament, and not due to a belief in diversification. Fenech, *Responsibility and Power…* (2005) p.157, 171

[39] For the failure of the office of migration see Chapter 3, pp.55-57

[40] The department of agriculture was to be established in parallel to a government experimental station. The station was established, but it was not provided with equipment until the early 1930s. Source: National Archives, London. File: CO161/120, "Office of Agriculture. Annual report 1927-1928" p.T8

[41] Fenech, *Responsibility and Power…* (2005) p.215

Policies of the British armed forces drained the resources of the Maltese government. The Royal Navy Dockyard wanted to create a reserve of skilled workers for strategic flexibility, but without having to pay for them. Thus the dockyard spread the work between as many workers as possible by placing the workers on short shifts, while it prevented skilled workers from emigrating. This created a "reserve army of the unemployed" around the Grand Harbour area, who were supported by the rudimentary system of charitable welfare that was in part financed by the Maltese state, thus draining on the self- government's resources[42].

In addition the British armed forces did not accept Maltese legislation as binding towards them. The Royal Navy Dockyard refused to accept the factories regulation law of 1924 that stipulated maximum hours of work, as well as the banning of children form some tasks. The Royal Navy argued that the dockyard fell outside the remit of any law passed by the Maltese parliament, since as an imperial institution it was only under the governor's authority. As a result all laws relating to trade, industry and commerce were largely ineffectual since they did not cover the countless Maltese working for the military or for military establishments such as the Navy, Army and Air Force Institute (NAAFI).

The self-government was also unable to represent the concerns of Maltese pressure groups against the British armed forces as exemplified by the NAAFI. Yet the institute continued to expand in size in Malta to the dismay of the local shopkeepers. They claimed that the institute damaged commerce, since it sold duty-free goods to an expanding circle of clients who often shopped on behalf of the Maltese, leading to a decline of business for shopkeepers, cinema owners, bumboatmen and victuallers who felt they could not compete with the NAAFI's duty free prices. Vassallo states that for the Malta Chamber of Commerce no other issue was more important to its members[43]. The local government complained in vain, despite the fact that its revenue suffered, with over 4% of the total Maltese imports in 1933 entering duty free for the NAAFI[44]. The failure to check the growth of the NAAFI in Malta indicated the Maltese government's impotence in confrontations with the British armed forces even in domestic matters that were supposed to be under its remit.

The armed forces further undermined the power of the Maltese parliament in domestic affairs by taking their demands directly to the governor. In 1926 the forces demanded that no damage compensation claims could arise from military training exercises and despite the objections of the

[42] Quote: Vassalo, *The Malta Chamber of Commerce* (1998) p.73; Ellul, "H.M. Naval Dockyard, Malta" (2004) p.41
[43] Vassallo, *The Malta Chamber of Commerce* (1998) p.88
[44] Bonnici, & Cassar, *A Chronicle of...* (2004) p.98; Greaves, *Report on Economic Conditions…*(1935) p.44; Vassallo, *The Malta Chamber of Commerce* (1998) p.87

Maltese government, the law was enacted by the imperial government in 1927. The imperial government refused the request of the Maltese government to take the issue to arbitration as provided by the constitution[45].

Most importantly infrastructure development plans were also derailed due to British military intransigence, while the limited funds available to the Maltese government were used up by unpaid bills of the armed forces. As analysed in chapter 6, the British military refused to pay for the provision of electricity and sewerage in its bases, thus running down Maltese government funds that were put aside for the expansion of the utility network. This expansion was then derailed by imperial government, who refused to fund its allotted share of the cost despite prior agreement[46]. The British armed forces did not want any alteration of their rights on the island, refusing to pay rent for the extensive land and real estate under their command. During the discussions for a new constitution it was decided to appoint a British arbitrator to determine which military properties could be given to the Maltese government in lieu of rent in order to provide space for civil projects and government offices. The arbitrator decreed that the military forces should hand over all land and property not in current use, with priority any buildings in and around the crowded Grand Harbour area, and suggested that the military's right to veto all construction if deemed to reduce the line of sight of a military establishment should be restricted[47]. The war office refused to accept the arbitration ruling, only giving to the Maltese government a small area outside Valletta in 1927[48]. The navy also continued its expansion of its establishments around the Royal Dockyard, gradually expanding to take over the adjacent Marsamxett harbour, displacing the last commercial harbour around the 'three cities' area and Valetta. Maltese businessmen requested the use of the dockyard's loading quays during periods of low military activity in order to alleviate the problem of commercial docking, but the navy refused[49]. As a result re-export, bunkering and victualling industries suffered since work had to be done by lighter rather than by direct docking.

The above examples serve to highlight how the British forces' intransigence undermined the legitimacy of the Maltese government. The armed forces were reluctant to change the balance of power on the island, thereby nullifying the limited attempts of the Maltese self-government in stimulating economic diversification. As a result Malta became ever more dependent on British military expenditure and government employment: the largest two employers became the Royal

[45] Fenech, *Responsibility and Power…* (2005) p.219
[46] See: Chapter 6, p.141
[47] Fenech, *Responsibility and Power…* (2005) p.215
[48] This delayed plans for a government hospital Ibid. p.217
[49] Ellul, "Maltese Imperial Mentalities" (1998) pp96-98.

Navy Dockyard and the Maltese government, with a combined share of GDP peaking at 30% in 1937. The vulnerability of Malta towards the possible reduction of military expenditure was perpetuated despite the limited efforts of the Maltese government made within the constraints imposed by maintaining a budget surplus. Thus when the rapid improvement of military aviation would reduce its strategic role, the Maltese economy was devoid of other ways of attracting significant expenditure. No political party in Malta found the position of the Maltese government vis-à-vis the imperial government satisfactory, and both nationalist and constitutional governments unsuccessfully attempted to increase the powers of the self-government during their term in office[50]. However, the self-government remained powerless against the pre-eminence of the British military priorities on the island.

Amery may have been successful in absolving the British presence of the economic problems of Malta, but he never gave the Maltese government the power to solve such problems; such power remained firmly with the British military and the imperial governor. The Maltese government protested, but it was powerless against the demands of the British armed forces which were supported by the imperial government. This limitation of the domestic parliament was evident to Amery even prior to the establishment of dual governance, stating that "the Maltese must be content... in a... constitution in which the decisive voice in all matters ultimately rested with the imperial authorities, drawing their compensation from the economic advantages of the existence of the naval and military establishments"[51].

The suspension of the Maltese constitution left the island in limbo: no major decisions could be made without the consent of the suspended parliament, or an order-in-council. As a result no major economic decision was taken during the period 1930-1938: the Governor of Malta effectively reverted to the laissez-faire policy in economic affairs that dominated colonial thinking in Malta before 1921.

The agricultural crisis and the Cypriot government

The backward nature of Cyprus was completely contrary to the aspirations of British and Cypriot statesmen at the time of the island's occupation in 1878. Control of Cyprus was seen by some British statesmen as a possible blueprint for the development of the Ottoman Empire with economic development considered as a main goal; Lord Beaconsfield stated that after maintaining peace "our

[50] The peak of such efforts was the attempt to grant colonial status to the Maltese government: Fenech, *Responsibility and Power…* (2005) Chapter 10.
[51] National Archives, London. File: CO158/426/5474 Amery to Plumer, 9 Apr 1921

next [consideration] is the development of the country"[52]. However, the subsequent occupation of Egypt removed the strategic purpose from the occupation of Cyprus, leaving "a lingering quality of being bereft, verging on pointlessness, which British rule there could never shake off"[53]. The annual 'tribute' of £92,799 that had to be paid to the British treasury led to colonial inaction and to "the tendency for the administration to fall into existing Ottoman grooves"[54]. Over time, British rule was increasingly challenged by the idea of *Enosis*, union with Greece, strengthened by the establishment of an independent Greek-Cypriot education system staffed by teachers educated in Greece.

From the 31st of July, 1920 to the 29th of November, 1926 Cyprus was ruled by Sir Malcolm Stevenson. Stevenson was an old-fashioned colonial officer who believed in maintaining the status quo, as "the nature and aims of his rule... possessed no creative vision"[55]. The standard of the Cypriot administration was considered by the colonial office as being very poor: J.C.C. Davidson, stated that "Cyprus had become a kind of dust heap for Africa, where people who had either defects in their characters or their minds were sent for service"[56].

The Cypriot constitution, given in 1882, had many faults. From the colonial point of view, the Cypriot constitution was problematic since the colonial government had to appease either the majority Greek-Cypriot or the minority Turkish-Cypriot community in order to have a smooth running of the legislation and of the government's budget. This heightened communal tensions that were already present on the island. For the Cypriots all power and influence remained with the colonial government, and the communities were unable to push the government into action in matters of their concern.

The Cypriot constitution was much more limited than Malta's: it provided for an executive council of government bureaucrats and invited members of the public who could draft laws, and an elected legislative council that could only accept or reject legislation and government fiscal appropriation bills. If the legislative council rejected a law, then the executive council could alter it and re-submit it; the legislative council had no right to suggest legislation. The executive could also circumvent the council with an order-in-council by the British monarch. The franchise for the legislative council was unusually wide, with the right to vote given to all men over 21 years old who paid their very low property tax. The council included six government officials, nine Greek-Cypriots and three Turkish-Cypriots, with the Greek and Turkish Cypriots elected exclusively by their own

[52] As quoted in Georghallides, *A Political…* (1979) p.7
[53] Holland & Markides, *The British and the Hellenes* (2008) p.165
[54] Ibid. p.166
[55] Georghallides, *A Political…* (1979) p.237
[56] J.C.C. Davidson was a private secretary to the secretary of state. Quoted in Georghallides. *A Political…* (1979) p.177

communities. In the case of a tie, the governor, who was also the president of the legislative council, cast the deciding vote[57]. Thus the government could overrule the wishes of the Greek-Cypriot majority as long as it could ensure that the Turkish-Cypriots voted in line with the colonial officials.

The constitution provided the Cypriots with a council that could only be effective if the communities were united in their opposition to the government, and even then they could only force colonial government to listen, but not to comply, with their opinion. Prior to the First World War the colonial government effectively disregarded the council, since the elected Turkish-Cypriot councillors voted with the government. This was in part due to the fear of the fate that would befall on their community if the Greek-Cypriot achieved *Enosis.* The government ensured the loyalty of the Turkish-Cypriots councillors through the use of substantial government patronage bestowed on them[58]. By 1926 this use of *divide et impera* was considered by the colonial office reformists as "derogatory to the dignity of the Government", since it exacerbated the underlying tensions between the two communities[59]. However, the divide and rule nature of the constitution was preserved in the new constitution granted to the island when it was declared a colony in 1925, as a combination of Turkish-Cypriot and government legislative councillors could still outvote the Greek-Cypriot members. Unlike the Maltese constitution, the Cypriot constitution maintained both the power and the responsibility for Cyprus firmly in the hands of the British authorities. Thus the colonial government bore the brunt of complaints over the island's poor economic performance during the interwar period. The Greek-Cypriots were aware of their weakness in controlling their own destiny and they resented the way the constitution was set up, since "so much power was given to foreigners while maintaining the Cypriots in positions of great weakness"[60].

Through the interwar period, the Greek-Cypriot leadership was divided in how to promote their demand of union with Greece (*Enosis*)[61]. Moderates were willing to work with the colonial government to develop the island, hoping to convince the British that they could be trusted with some form of self-government. They saw the constitution given to Malta in 1921 as a possible reward for continued cooperation, since "Britain did not deny complete political freedom to the

[57] Georghallides, *A Political…,* (1979), p.42.
[58] For example, Ifran Bay was a member of the executive and the legislative council, as well as the Turkish delegate of the Evcaf which administered Muslim religious property. Thus his ability to exert substantial patronage over the Turkish-Cypriot community depended on maintaining the favour of the colonial administration. The fate of the Ottoman community in Crete was still fresh in their minds. See: Holland & Markides, *The British and the Hellenes* (2008) Chapter 6
[59] Colonial official A.J. Dawe confidential minute quoted by Georghallides. *A Political…* (1979) p.30
[60] Clerides, *Ελευθερία,* 6 Dec 1922, 23 Dec 1922
[61] The chief institution that promoted the cause of the Greek-Cypriot majority was the autocephalous Orthodox Church of Cyprus: but even senior church leaders were divided between moderates and extremists.

Maltese, who owe their economic livelihood to Britain... There is no reason not to give similar freedom to the Cypriots who can be economically self supporting... and willing to ensure imperial military interests"[62]. The moderates believed that after achieving self-government Britain might be convinced to cede Cyprus to Greece, as it did previously with ceding the Ionian Islands protectorate in 1864, and in aiding Cretan *Enosis* in 1913[63].

Extremists argued that cooperation perpetuated the British occupation of Cyprus. They argued that only the union with Greece would solve all the economic and social problems of the island, since Cypriots would be cared for by a government who had their national interests at heart. Such a union could be expedited through a policy of resistance against colonial rule. The extremists were ennobled by events in First World War: Britain officially annexed Cyprus, thus eliminating the last legal claims of the Ottoman Empire on the island[64]. In addition the British government made a public offer of Cyprus to Greece in return for Greece joining the war on the side of the Entente, an offer rejected by the Greek government who at that time wanted to remain neutral[65]. This encouraged Greek-Cypriot nationalists who thought of *Enosis* as imminent; many fought for the Greek state during War, and upon their return they demanded the launching of a non-violent struggle to expedite the union with Greece[66]. The offer of Britain to Greece, combined with the Greek advance in Asia Minor inflamed hopes for union, making this the dominant view leading to the Greek-Cypriot leadership, which was organised by the Church, to abstain from the legislative council until the principle of self-determination (and thus their desire for union with Greece) was granted to Cyprus[67].

Although the intransigence of the Greek-Cypriot elite annoyed Stevenson, it did allow for an interrupted running of the government administration: the legislative council lacked a sufficient number of elected Cypriot members to oppose the government. This enabled the government to pass laws that were unpopular to the Turkish-Cypriots, such as increasing taxation. In addition the government ignored calls by Turkish-Cypriot delegates for government measures to alleviate the agricultural crisis that was made evident after the 1921 recession[68].

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[62] Clerides, *Ελευθερία*,13 Jan 1922. Author's translation from Greek.
[63] For the Ionian Islands see: Holland, & Markides, *The British and the Hellenes* (2008) Chapter. 3
[64] This annulled the administration's argument that the removal of British power would lead to Cyprus reverting to Ottoman control, since Cyprus was still theoretically part of the Ottoman Empire.
[65] For the offer of Cyprus to Greece see Georghallides, *A Political...* Chapter 4.
[66] An example: Lanitis Nikolaos of Kleathis, a legislative council member who made impassioned speeches for *Enosis* in the council, was a volunteer in the Greek army during the Balkan wars; in 1931 he was deported for his political beliefs.
[67] Georghallides. *A Political…* (1979), pp70-73, p.86, p.170
[68] Cyprus, *Minutes of the Legislative Council 1922* (Nicosia: GPO, 1922) 16 March 1922, p.19

By the end of 1922 the defeat of Greece in Asia Minor caused a rethink of Greek-Cypriot national policy. The extremists were disheartened because Greece did not make any claim on Cyprus during the negotiations for the treaty of Lausanne[69]. Moderates gained the upper hand and argued that co-operation with an aim to gain self-government similar to Malta's was a much more viable policy[70]. As a result some Greek-Cypriots returned to the legislative council in 1923. However the decision to cooperate with the colonial government was not accepted by all, and extremist sections attacked the Greek Cypriot councillors in the press, arguing that they would not be able to achieve anything other than to legitimise British rule, since the colonial government was not interested in cooperating for the prosperity of the island[71].

The returning Greek-Cypriot members placed a great attention on the major economic problems of the island in their discussions within the legislative council, especially in trying to push the government to do more to alleviate the unfolding agricultural crisis that was described in chapter 4. The focus on economic issues was an attempt to find common ground with the Turkish-Cypriots and thus present a common front in the council. Farming measures had a greater chance of receiving bi-communal support since in other important issues, such as majority rule and self-determination, the Greek and Turkish-Cypriots were in complete disagreement. This policy was spearheaded by the Bishop of Kition, the Metropolitan Nikodemos Mylonas: he was one of the most astute legislative councillors, and was willing to work with the British authorities and his Turkish-Cypriot colleagues in order to modernise the island[72]. Thus the legislative councillors found common ground in appealing to the government for remedial policies in agriculture in an attempt to achieve tangible results. Yet, the returning Greek-Cypriots were very frustrated by the set-up of the legislative council, since they could not suggest laws, nor force the government into any action. Results were important due to the internal conflict in the Greek-Cypriot community; the moderates in the council would only be supported by their community if they achieved reforms, and a failure to do so would strengthen the extremists who argued that their presence only legitimised British rule.

Stevenson's government did not appreciate the precarious position of the Greek-Cypriot leadership, and remained determined to follow a policy of laissez-faire. Faced with combined pleas of all

[69] The Treaty of Lausanne was a peace treaty that settled the dismemberment of the Ottoman Empire and was signed on the 24th July 1923 by the Grand National Assembly of Turkey and the allies of the First World War.
[70] Clerides, *Ελευθερία,* 13 Dec 1922, 23 Dec 1922
[71] Ibid.
[72] The Bishop of Kition, the Metropolitan Nikodemos Mylonas, was a member of the legislative assembly from 1925 until his forced deportation to exile in 1931. He was a very astute economic commentator, having substantial education in Paris and Athens, and being responsible for the establishment of the first historical journal in Cyprus.

Cypriot legislators for government action in aiding agriculture, the government dragged its heels and went ahead with its own limited relief measures without consulting the legislative council, making the councillors appear immaterial. Clerides argued that "the legislative council's goodwill stalls in front of government machinations, as their role is checked, their disagreements ignored and their voices drowned out"[73]. The disappointment by some Greek-Cypriot moderates who supported the return to the legislative council is telling: in April 1924 councillor Everiades resigned arguing that the council was unable to place any issue for consideration by the government and as a result the council was useless in its attempts to solve the problems of Cyprus[74].

The examples described below indicate how Cypriot frustration towards the government, stoked by the government's reluctance to listen to the requests of the legislative council, increased to the point where cooperation became impossible, and violence became likely. With the return of the Greek-Cypriots in the council, the elected members implored the High Commissioner to mitigate the developing agricultural crisis through government action. The Cypriot councillors asked the government in 1923 to consider establishing an agricultural bank and to abolish the tithe in order to help the farmers[75]. However, the government frustrated the councillors by only bringing forward bills that served the government's interests, while assuring the councillors that the government was considering the establishment of an agricultural bank in the immediate future[76]. It was made clear to the members that the unfolding agricultural crisis was considered to be outside the government's remit, even though the Cypriot members were willing to pass laws and release funds that would allow the government to react to the crisis. The government unwillingness to intervene in the agricultural industry led to tensions with the Cypriot councillors when Stevenson demanded that the council approve increased taxation, threatening that a failure to approve the tax increases would lead to the shelving of the government's future plans for an agricultural bank[77].

The government's continued inaction in trying to tackle the farming crisis led to the appearance of rifts in its relationship with the Turkish-Cypriot councillors. The Turkish-Cypriots were the minority community on the island and the recent plight of the Cretan Muslims confirmed their fear of *Enosis.* Turkish-Cypriot leaders saw the perpetuation of British rule as the community's most effective method in ensuring their continued existence on the island; this created a close relationship between the community and the colonial government. Turkish-Cypriots were overrepresented in the

[73] Clerides, *Ελευθερία,* 20 Jan 1923; the author's translation.
[74] Mr. Everiades resigned his seat in April 1924. Georghallides. *A Political…* (1979) p.314
[75] Cyprus, *Minutes of the Legislative Council of the Session of 1923* (Nicosia: GPO, 1924), 17 January 1923 pp.3-7
[76] They included a law on education, additional tax on matches, the establishment of a rural police force, and the restructuring of the village authorities.
[77] Cyprus, *Minutes of the Legislative Council... 1923* (1924), 7 December 1923, Fenn, pp.178-179

government bureaucracy while most Turkish-Cypriot legislative councillors held government positions, mainly in the government-run Muslim charity of EVKAF. Yet, by 1924, some Turkish-Cypriots, perhaps influenced by the *etatism* of Ataturk, were willing to incur the wrath of the colonial government and vote against unpopular laws, and were especially against any further increases of taxation without government intervention in the agricultural economy or a cut in government expenditure[78]. The councillor Dr. Eyoub voted regularly against tax increases, arguing that the government should first check its rising expenditure, especially in terms of civil service salaries[79]. However, his efforts were not coordinated with the Greek members and thus the tax increases were passed thanks to some Greek-Cypriots voting for the government.

Dr. Eyoub's attitude was a warning sign that the attitude of the Turkish-Cypriot community was changing: its representatives found it increasingly difficult to justify to their community further increases in taxation during a period of severe agricultural distress. As the economic situation deteriorated, the Turkish-Cypriot councillors were under pressure to vote against measures that would further reduce the income of their community, which led to the breakdown of the 'divide and rule' system used by the colonial government in order to bypass local opposition. Dr. Eyoub's actions were a warning sign that went unheeded by the colonial government. The need for increased taxation during the great depression and drought that so seriously affected Cyprus would cost the government the support of the Turkish-Cypriots, forcing it to raise revenue through direct orders from the king or by surrendering additional powers of budgetary control to the legislative council.

The reluctance of the government to act decisively in solving the rural crisis led to a loss of goodwill by the Cypriot representatives and their communities. Cypriot councillors wanted the government to bring the tax system up to date, with Greek and Turkish members urging the government to abolish the tithe tax[80]. The taxation system of Cyprus was in need of modernisation as it was still based on the inherited Ottoman system. Although the aggregate tax rate was modest at 14.7% of GDP in 1924, the taxation laws were regressive against farmers, as a disproportional amount was extracted from the agricultural sector through taxes on production and capital[81]. The

[78] Georghallides argues that Dr. Eyoub was more motivated by his dislike of the Turkish delegate Ifran Bay, but concedes that the Turkish victory did have a role to play. Georghallides. *A Political…,* (1979) p.408

[79] Cyprus, *Minutes of the Legislative Council... 1922* (1922) 18 March 1922, Dr Eyioub p.18; Cyprus, *Minutes of the Legislative Council... 1923* (Nicosia: GPO, 1923) 7 Dec 1923 Dr Eyioub p.181; Cyprus, *Minutes of the Legislative Council of the Session of 1924* (Nicosia: GPO, 1925) 17 Dec 1924 Eliades, p.56

[80] Eliades, with the vote of the elected members, inserted a paragraph in the council's reply to the Commissioner's speech, which declared that demand to "abolish the bad system of the tithe, to which distress of the Cypriot farmer is largely due". Source: Cyprus, *Minutes of the Legislative Council... 1924* (1925) 2 April 1924, p. 14

[81] The tithe was still collected on most products until 1926. Other taxes penalised capital, such as the animal tax (on all farm animals) and the locusts tax (on carob exports). The sole tax on property was *Verghi Kimat* which taxed all

tax system was complex and hard to administer: Sir Ralph Oakden, a finance specialist, found it impossible to estimate how much taxation was paid by the poorest but confirmed that the weight of taxation was on small farms[82]. The tithe was particularly expensive to collect and enforce, while it placed a great burden on smallholders[83]. Yet the administration dithered with its abolition until February 1926, as it was worried that abolishing the tithe would lead to a loss in revenue: the government would only consent to its abolition if it could ensure that government revenue remained unaffected by introducing additional taxation[84]. The related tax increase was resented by all Cypriot councillors, since the GDP data in chapter 3 indicate that the island was in a recession; thus they reiterated their concerns with the continual increases in taxation without an assessment of possible government savings. Stevenson resorted to threatening the council, stating that if the tithe abolition bill was rejected it would be withdrawn and not resubmitted[85]. Thus the government's reluctance to give the legislative council the right to provide suggestions for upcoming legislation led to the elimination of any political benefit that would arise from the abolition of the tithe: by 1926 the working relationship of the Cypriot legislative councillors and the government was breaking down. Meanwhile the Cypriot councillors were aware that the additional tax increase would cause dismay in their communities and this would undermine their positions as community leaders.

The colonial government also exhausted the goodwill of the legislative council on the issue of the agricultural bank. The chief secretary of the colony assured members in the opening session in 1921 that an agricultural bank was under consideration, but such a bank was not established until 1925; the government did not allow the legislative council to have any input in the creation of the bank, despite the insistent calls by Cypriot councillors for its creation[86]. The establishment of the agricultural bank and its rapid collapse are described in chapter 4; the bank was badly planned and poorly capitalised, and thus had a limited positive impact in easing the rural credit crunch that was the key to solving the Cypriot agricultural crisis[87]. The legislative council members warned the government of the risks the bank faced prior to its creation, but their concerns were ignored. The Metropolitan Mylonas argued that "the council could not, however, consider as adequate a bank

immovable property (including fruit bearing trees) at a flat rate of 0.6% to 0.4% of value, depending on whether the property was rural or urban.

[82] Oakden, *Report on the Finances* (1935), p.56

[83] Cyprus, *Minutes of the Legislative Council of the Session of 1926* (Nicosia: GPO, 1928) p.24

[84] Oakden, *Report on the Finances* (1935) p.44

[85] Georghallides. *A Political…* (1979) p.365

[86] Ahmed Said presented a petition for an agricultural bank in 1921, but the government did not create one despite constant requests until late 1924.The demand was also later supported by Hami Bay. Source: Cyprus, *Minutes of the Legislative Council 1921* (Nicosia: GPO, 1921) 8 March 1921 Ahmed Said Effendi p.3, Hami Bay p.6, Chief Secretary p.9; Cyprus, *Minutes of the Legislative Council... 1922* (Nicosia: GPO, 1922) 8 March 1922. Dr. Eyioub p.5 . Cyprus, *Minutes of the Legislative Council... 192*3 (Nicosia: GPO, 1924) Dr. Eyioub, Elliades, p.176.

[87] See: Chapter 4, pp.113-115

with a capital of £50,000 for a place where the debts of the population exceeded one million pounds", since a bank with such a limited capital base would be speculative rather than benevolent in character: it would not offer long-term loans at low interest, in contrast to the established system in Greece[88]. The bank's subsequent failure increased the frustration of the Cypriot councillors who forewarned about its inappropriate set-up, but saw their suggestions ignored by the government.

By the time Stevenson left Cyprus, the relations between the government and Cypriot politicians was at an all time low. The recession of 1926 exposed the legislative councillors to accusations of inertia by extremist press, especially when compared to what the more active governments of Greece and Turkey did in terms of agricultural policy[89]. In an effort to force the government into action, the council members bridged their inter- and intra-communal differences to make a show of force and demand the abolition of the 'tribute'. The legality of the British Treasury's collection of the 'tribute' expropriation expired with the annexation of the island by Britain at the start of the First World War. The 'tribute' was a cash payment in lieu of lost tax revenue to the Ottomans that was deferred to the British treasury as it guaranteed defaulted Ottoman loans. The annexation of Cyprus meant that the island was not Ottoman territory under British occupation, but a British possession, thus invalidating the justification for the 'tribute'. Yet, the British Treasury would have none of it: it decided that Cyprus would bear a share of the debt of the collapsed Ottoman Empire, despite not being part of the Empire since 1878, and continued demanding an amount equal to the 'tribute' from the Cypriot government, renaming it "Cyprus' share of the Ottoman debt"[90]. Cyprus continued to pay the tribute even after being declared a crown colony in 1925 and despite the abolition of the Ottoman Empire, and the refusal by other countries to repay Ottoman debt.

The renaming of the 'tribute' had unintended consequences in the legislative council. Prior to 1914 the 'tribute' was a tenuous connection to the Ottoman Empire's claim to Cyprus if the British occupation ended and thus Turkish-Cypriots supported the raising of the charge. The dissolution of the Ottoman Empire meant that the Turkish-Cypriot delegates had no reason to defend the charge anymore, especially since it represented 7.4% of government expenditure in 1926 that went to the British treasury. In consultation with the Greek-Cypriot members, the Turkish-Cypriot councillors

[88] Cyprus, *Minutes of the Legislative Council 1925, part II* (Nicosia: GPO, 1926), 12 Nov 1925 Metropolitan Mylonas, p.19.
[89] Pamuk, "Intervention during the Great Depression", (2000), p.334; In Greece the first bank was the Currant Bank specialising in financing wine growers, with the Agricultural Bank established later in 1929; however, the Greek government was very active in farming finance through refugee resettlement programmes: Mazower, *Greece and the Interwar*... (1991), p.129, p.133
[90] Georghallides. *A Political…* (1979) p.393

agreed to throw out the appropriation bills of 1927 in order to show their displeasure towards the policies of the outgoing governor.

The fierceness of the attacks against the government from both Turkish and Greek-Cypriot members surprised the acting governor as they were not just aimed against the debt charge but the government as whole. Stavrinakis and the Metropolitan Mylonas attacked the wasteful employment of highly paid British officials when better trained Cypriots were available, the government's continued increases in taxation and the very limited attempts by the government to revive the farming economy[91]. Dr. Eyioub also argued that the assembly's "earnest desire was that this sum might remain in the island for the benefit of the island"[92]. Even moderate Turkish-Cypriot delegates like Djeladedin Effendi linked the charge to "a viper sucking the blood of the Cypriots. The item could no longer be tolerated in the budget and [we] were obliged to raise a voice of revolution against it. Had this amount been used as capital for an Agricultural Bank 25 years ago this country would be... far better"[93]. The result was a usual defeat for the Cyprus government as the Cypriot united to throw out the budget for 1927. The *divide et impera* policy broke down in the face of increasing economic distress and perceived government indifference.

This might not have mattered much if the British monarch would approve for the governor to rule through the issue of orders-in-council indefinitely, yet it was made clear to the Governor that ruling by decree was a temporary measure: the new governor had to work with the legislative council[94]. As a result the new governor had to work with the legislative council or else risk not having approval for the colonial government's budget. Unless co-operation was achieved the governor would have to accept the growing influence of the legislative council or persuade the colonial office to abolish the constitution. The colonial government's unwillingness to allow the legislative council real power over the use of government revenue created a political stalemate that led to violence in 1931.

The appointment of Sir Ronald Storrs as governor at the end of 1926 was an effort by the "new imperialists" to rectify the flaws of Stevenson's administration. Storrs was a rising star, who shared Amery's views for more active development policies as a bulwark against the nationalism in the

[91] Cyprus, *Minutes of the Legislative Council... 192*6 (Nicosia: GPO, 1928), 24 Nov 1926 Stavrinakis, Metropolitan Mylonas pp.144-145
[92] Cyprus, *Minutes of the Legislative Council... 192*6 (1928), 24 Nov 1926 Dr. Eyioub p.155
[93] Cyprus, *Minutes of the Legislative Council... 192*6 (Nicosia: GPO, 1928), 24 Nov 1926 Djelaleddin Effendi p.156
[94] However, the rise of the Labour party altered the political landscape of Britain, and seemed to lead to a restriction of the use of orders-in-council, indirectly strengthening the Cypriot legislative council. The appropriations bills were signed into law by the King on 7 and 11 Feb 1927.

colonies[95]. Storrs quickly made a favourable impact to the Cypriots by being very active in creating new institutions which Cyprus lacked: he established a public library, the chamber of commerce, the medical society and a music school. In addition he successfully lobbied for the appointment of a Cypriot to the position of solicitor-general, which was unthinkable under Stevenson's administration[96].

Yet the legislative council remained determined to reject all appropriation bills unless the burden of the Turkish Debt Charge was removed, meaning that neither the governor nor the colonial office could ignore the issue any longer. The details of the abolition of the 'tribute' are lengthy and best described in Georghallides, but it is clear that the legislative impasse created a momentum which forced the Treasury to revoke the charge early in 1927[97]. The revoking of the charge was not unconditional: Storrs committed the Cypriot government to an annual charge of £10,000 for imperial defence, releasing £32,799 for other purposes. However, the treasury demanded that the unspent assets of the tribute would remain with the British treasury, despite not having a legal claim on the money[98].

These assets were a property of the Cypriot state, and such an amount constituted a huge bonus to the island if invested for development projects. The legislative council knew about the existence of the assets but Storrs did not notify the council that he accepted the treasury's demand of keeping the money[99]. Storrs' deceit was not revealed until 1931, and it was pivotal in propelling the escalating political crisis into violence.

It was the mutual wish of the colonial office and the Cypriots in the legislative council that the £32,799 saved by the elimination of the 'tribute' would be used for a small development loan. However, the colonial government mismanaged windfall. Its development plan was described as a "very amateurish document" by the colonial office, since no investment was centred on the farming industry, where it "would be the most quickly reproductive"[100]. This led to lengthy negotiations between teh government and the colonial office; as a result by the time the government applied for a loan the money saved by the 'tribute' was spent on government wages in connection to healthcare improvements[101].

[95] Georghallides, *Cyprus and the Governorship…*(1985) p.2, p.121
[96] Ibid. p.11, p.14, p.25
[97] The abolition of the 'tribute' is the central theme in Georghallides, *Cyprus and the Governorship...*, Chapter 2.
[98] The account held more than £1,061,896 sterling in stock. Ibid. p.136, p.555, p.653
[99] Ibid. p.53
[100] National Archives, London. File: CO67/225/6 Minute by A.J. Dawe 12 June 1928
[101] For the uses of the surplus see Georghallides, *Cyprus and the Governorship…*(1985), chapter 3

By the elections of 1930 the worsening economic situation had strengthened the hand of the nationalist extremists: Munir Bey, the chief supporter of the government, and beneficiary of significant patronage was defeated by Kemalist Nejati Bey, while only the Metropolitan Mylonas held his seat from the Greek-Cypriots. The new Greek-Cypriot politicians were hardliners, who wanted to use the council as a public forum to oppose the government. As a result the new legislative council was much more militant and eager to block all government requests exactly when the great depression necessitated co-ordinated action.

It was the deep and sustained recession in Cyprus during the great depression that caused an acute political crisis, and the combined effects of the political crisis, drought, and the great depression led to the October 1931 riots. The new Cypriot legislative councillors wanted immediate measures to alleviate the drought-stricken farmers, while the government, facing a severe revenue shortfall, wanted to increase government revenue through new tax increases[102]. As seen in chapter 1, Storrs remained optimistic on the condition of the Cypriot economy even as the recession took a turn for the worse and he was reluctant to ask the legislative council for an increase in taxation that would antagonise the Cypriot legislative council[103]. Thus, the government used up its limited reserves to pay the widening budget deficit, but as table 8.2 indicates the reserves of £90,000 were used up by the end of 1931.

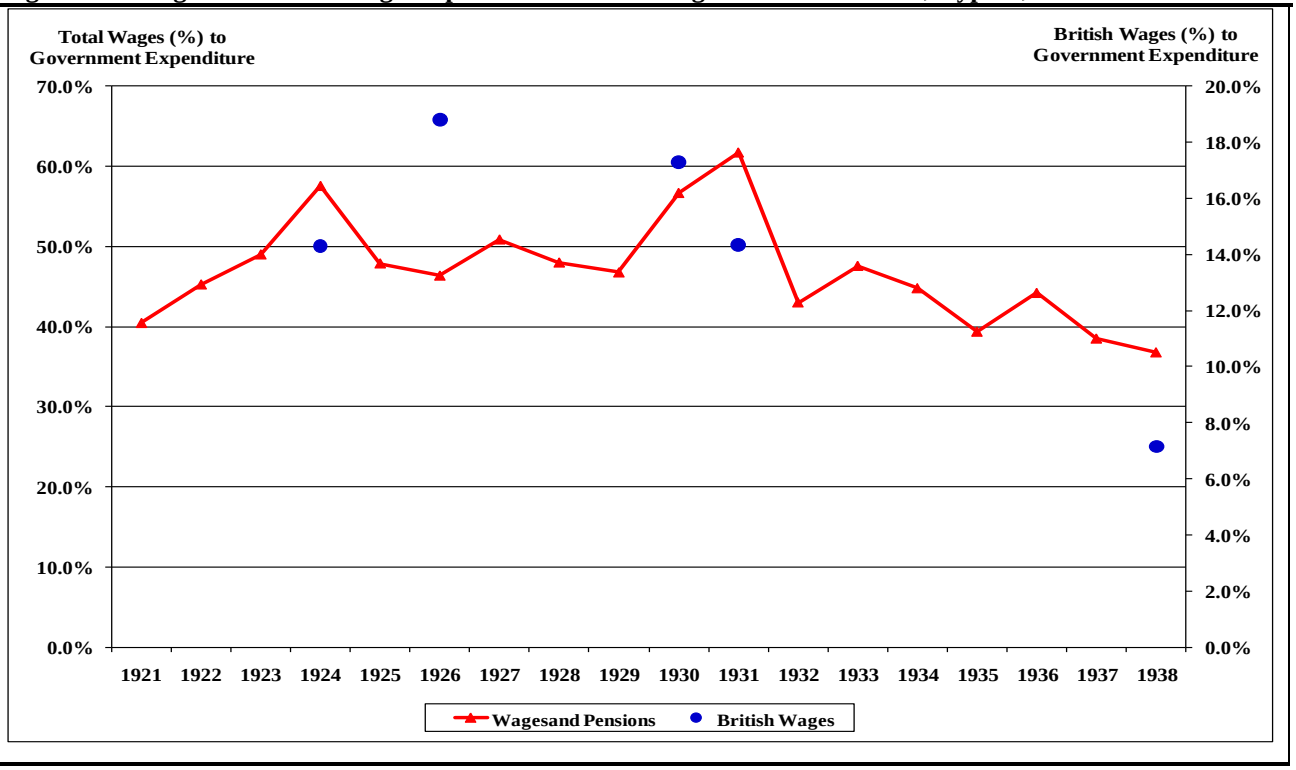
The economy slipped further in recession in 1931, making it evident that the government budget in 1932 unless there was a decrease in expenditure / increase in revenue. London was appalled at Storrs's policy of running down the reserves of the colony, and reprimanded the governor for not increasing taxation effectively forcing Storrs to go to the legislative council for the approval of additional taxation[104]. The new, nationalistic, legislative council would not allow any tax increases unless the government first reduced its wage expenditure, particularly by the wage expenditure of British colonial officials and by replacing expensive British officials by lower paid Cypriots.

The council's complaint against the rising share of expenditure in wages, and of British officials in particular, was becoming ever more important due to the great depression[105]. Figure 8.3 indicates that the Cypriot legislative councillors were right to worry that the government cut non-wage

[102] For an assessment of interwar tax policy see: Oakden, *Report on the Finances* (1935), Chapter IV
[103] Sir Ronald Storrs as quoted in Georghallides, *Cyprus and the Governorship…*(1985) p.453
[104] National Archives, London. File: CO 67/236/11 "Estimates 1931", Note by W. Shipway 21 Dec 1930; Georghallides, *Cyprus and the Governorship…*(1985) p.457, p.544
[105] Cyprus, *Report... into the System of Taxation in Cyprus* (1930) p.5

expenditure more than wage expenditure in an effort to balance its budget during the period 1930-1931: as a result the share of wages to total government expenditure peaked to 61.7% of total expenditure by 1931. A substantial amount of the wage expenditure was being received by three dozen British officials, who dominated all important posts and were paid at a higher scale than local bureaucrats. The government reduction of non-wage expenditure limited government aid to the drought-stricken framers: projects such as the construction of an experimental farm and some irrigation schemes were scrapped, precisely when Cypriots councillors were demanding additional government measures in order to reduce unemployment and provide relief to the countryside. The disagreement between the council and the government led to a political deadlock that prevented concerted action to help the farmers, further adding to the frustration for the lack of sufficient government action by the Cypriots.

Figure 8.3: Wage and British Wage* expenditure as share of government revenue, Cyprus, 1921-1938.



Note: * British wages calculated by selecting the highest salaried officials and removing those whose last name suggested Turkish, Greek, Armenian or Maronite descent. Source: Cyprus, *Statistical (Blue) Books*, (1921-1938).

The government did not allow the legislative council to dictate its budget as Cypriots would decide on the amount of British officials who would remain in employment[106]. Thus by April 1931, the government was forced to pass further tax increases through orders-in-council. The recession deepened, Nicosia was inundated by grain farmers from the surrounding Mesaoria plain, who had lost their livelihood as the prices of grain were slashed while their crop failed due to the drought.

[106] Georghallides, *Cyprus and the Governorship…*(1985), pp.154-157, p.567

Their presence made the political deadlock potentially explosive; as Cypriot councillors felt something had to be done to help farmers immediately. The Cypriot government was squeezed between the colonial office which wanted a budget deficit to be avoided at all costs, and the legislative members who wanted to reduce employment of British personnel and increase government expenditure on agriculture[107].

The government's continued use of orders-in-council led to increasing calls for the Greek-Cypriot members to resign since they were deemed impotent in guiding government policy. The extremist press argued that cooperation failed and that the goal of the community should be to begin a policy of resistance for union with Greece[108]. Some Greek-Cypriots argued that British legitimacy in Cyprus was based on the promise of shared prosperity given during the island's occupation in 1878: the lack of development and the prolonged recession led to the reneging of the British promise, eliminating Britain's legitimacy over the Greek-Cypriots.

The growing pressure by the press eliminated any room for manoeuvre of important Greek-Cypriot moderates, such as the Metropolitan Mylonas, who were afraid of losing the leadership of the Greek-Cypriot community. The constant use of orders-in-council led to some Greek-Cypriot councillors to issue a manifesto. It argued that the reluctance of the government to rid itself of overpaid British officials made it clear that prosperity did not lie with Britain: the fifty-year British rule had convinced them that prosperity could not be achieved under political bondage and from now on union with Greece was the first prerequisite for economic recovery[109]. Leaders such as the Metropolitan Mylonas chose to keep their authority by taking the lead in organising a struggle against British rule rather than risk losing his leadership by insisting on cooperation with a government who failed to take account the wish of the legislative council.

In this volatile situation, the news of the agreement in relation to the Cypriot assets held in the British treasury that Storrs kept secret was made public in the British parliament, leading to a massive loss of trust by the Cypriots towards the Governor; this consolidated the common front of Greek-Cypriot and Turkish Cypriot legislative councillors against the government in order to force it to reduce wage expenditure before any additional taxation was raised[110]. On the 28th of April

[107] Georghallides, *Cyprus and the Governorship….*(1985) p.563
[108] Theodotou, T. *Ελευθερία* 23 March 1929 ; Georghallides, *Cyprus and the Governorship…*(1985) p.7
[109] Manifesto from Greek-Cypriot Legislative Council members, *Ελευθερία* 17 Jan 1931
[110] The policy also papered the arguments between moderates and extremist Greek-Cypriots. It served the policy of the moderates who wanted to prove that Cypriots could do the job of the British bureaucrats, thus strengthening the claim for self-government while allowing the extremists to rail against the government without frightening the Turkish-Cypriots with demands for *Enosis*.

1931, all but one of the elected Cypriot councillors rejected further tax increases without the government first reducing wage expenditure and British wage expenditure in particular. The government asked for a further order-in-council, but its issuing was delayed as the colonial office checked the budget to ensure budget balance since the reserves of the colony were exhausted.

However, the government could not agree to the demands of the legislative council as it did want to give it the right to dictate employment in the colonial government as then Cypriots would dictate the number of the British officials in the government. On the 16th of October 1931, the Metropolitan resigned his seat as a legislative councillor, decaling through a public letter that his resignation was an action against the "tyrannical" use of orders-in-council and restating that economic prosperity was only possible with an immediate union with Greece. However the Metropolitan's resignation escalated the conflict with the government, since he publicly proclaimed the immediate union of Cyprus with Greece and called for mass civil disobedience in order to force the British to accept it[111]. This was combined with a protest march that concluded in violence and the burning of the Governor's house: the riots spread throughout the island, leading to several Cypriot deaths[112]. Military re-enforcements led to the quelling of the unrest, and in contrast to the British policy after the 1919 riots in Malta, British rule became authoritarian and repressive: the constitution was suspended, Greek-Cypriot political leaders were deported and others imprisoned, and freedoms of speech and of political action were severely curtailed. Storrs was replaced by a military governor, and the budget deficit of 1931 was covered through a punitive tax against the Greek-Cypriot population, collected until 1936, as the Greek-Cypriots were judged by the government to be at fault for the October riots.

The Cypriot constitution was flawed for both Cypriots and the British. The British could not enforce their will through the legislative council if the economic interests of both communities were directly threatened, and yet they were unwilling to allow the council to draft laws. For Cypriots, the council did not allow them to legislate on their problems as they saw fit and could only stimulate the government to act if there was a governor in place who was willing to intervene in the economy. Sir Ronald Storrs was willing to intervene to aid the agricultural industry, but he was not willing to give the legislative council control over the employment of British officials. The economic situation of the government allowed the Cypriots, once they united under economic issues, to forcefully present their demands to the government, only for the colonial administration to circumvent the legislative council through orders-in-council, increasing the frustration of Cypriot politicians who

[111]The manifesto is translated in full in Georghallides, *Cyprus and the Governorship….*(1985) pp.688-689
[112] Command 4045, "Disturbances in Cyprus in October 1931" (1931) p.541

demanded greater government intervention. The economic malaise that befell on Cyprus during the great depression added a sense of urgency in the actions of the Greek-Cypriots, with the elected leaders violently rejecting the legitimacy of the government.

It seems clear that the worsening economic conditions of the 1930s acted as a catalyst for the events and they led to their deterioration to the point of violence. The worsening economic conditions soured the political relations between the Cypriots and the government. This, combined with the ongoing rural crisis, made worse by the great depression and drought, created conditions for mass unrest. The impact of the great depression in Cyprus was far more severe than Storrs realised; the increased taxation requested by the government was further squeezing the disposable income of the rural population at a time when it was substantially reduced by the effects of the depression and drought. In addition the credit crunch affected the moneylenders who had their savings wiped out through mass rural defaults. The agricultural crisis affected Greek-Cypriots and Turkish Cypriots equally and as a result there was a consensus across class and community lines that more should be done to alleviate the plight of the agricultural industry by the colonial government.

The failure of the government to work with the legislative council during the 1920s made cooperation during the great depression impossible. The government's reluctance to act according to the wishes of the council led to the radicalisation of the Cypriot nationalistic policies, and thus making cooperation difficult. This took place in many British colonies during the interwar period: the colonial policy of deflation resulted to "the British unwittingly drove the peasants in the arms of the congress" opposition in India, while the imposition of additional taxation in order to balance the budget led to riots in the early 1930s in most of the British territories of West Africa[113]. The drought and the great depression do not exonerate the Cypriot government from the responsibility of the riots: the government refused to listen to the increasingly frustrated calls of the councillors who wanted something to be done to help the struggling farming sector and stop the continual tax increases. The resignation of some of the Greek-Cypriot councillors was the spark for the riots, but it could have been prevented if the government was willing to accommodate the desire of the Cypriots for a voice in economic policy.

The October 1931 riots had serious long term effects and coloured the relations of the British and the Greek-Cypriots, eventually leading to the anti-colonial conflict. Holland and Markides argued that "the rupture of October 1931 was to define the polarities of colonial Cyprus for a long time

[113] Rothermund. *The Global Impact of the Great Depression* (1996) p.95; Brown, *The Economies of Africa...* (1989) p.82

ahead"[114]. The riots resulted in the final rupture of any sentiments of cooperation that remained in Greek-Cypriot moderates, leading to the EOKA conflict after the Second World War. The Greek-Cypriot leaders moved away from economic considerations and thus lost the ability to present a united front with the Turkish-Cypriots against the British, fostering inter-communal tensions. The declaration of *Enosis,* without prior cooperation with the British became the aim of the Greek-Cypriot leadership, leading to direct confrontation against the British and the Turkish-Cypriot community.

Conclusion: the limited role of colonial government

The role of the colonial governments in the economic development of interwar Malta and Cyprus was limited. Some of the issues facing the islands were beyond the scope of either government to solve: the domestic markets of the islands were far too small to be able to promote growth when global protectionism was on the rise, while the global downturn of trade and prices during the great depression was outside the control of the Maltese and Cypriot governments.

Yet, during the interwar period, there was a substantial increase of government revenue as a share of GDP. This contravened the spirit of small government and laissez-faire policies that colonial governments had previously adhered to, thus increasing demands for government solutions to the islands' problems. Unlike Greece, the colonial governments of Cyprus and Malta maintained a strict budget balance despite increasing government expenditure, as the two main criteria for a colonial governor was his ability to maintain peace and government surpluses. As a result government expenditure was pro-cyclical with recessions, which proved counterproductive as it pushed Cyprus into a political crisis that led to a violent rejection of British rule.

There was an alternative way to the island's budget policy: independent Southern European states also increased government expenditure, but at the same time they reluctantly expanded the budget deficit in order to prevent civil unrest. This stimulated industrial recovery and alleviated the economic downturn during the great depression. A similar policy would have helped Cyprus, and possibly Malta, to have faster economic growth during the interwar period.

Because of the need to balance the budget, colonies had very limited fiscal means to alleviate island-specific problems and the effects of the great depression. Yet, Malta urgently needed to diversify its economy away from servicing the British military, and Cyprus required a government

[114] Holland R. & Markides, D. *The British and the Hellenes* (2008) p.186

solution to the intractable agricultural crisis. With budget balance being the priority and government wage expenditure rising, the government expenditure that was set aside to solve these problems was very limited, leading to poorly financed, ad-hoc policies which failed, disappointing the islands' inhabitants.

Malta was granted self government in charge of domestic affairs but its power was checked by the British armed forces which wished to maintain unlimited power over an island that they considered a fortress. Malta's dependence on the British military proved to be a double-edged sword: it ensured income stability but it severely limited the ability of the Maltese government to implement its own policies.

The colonial office was successful in directing the frustration due to the slow development in Malta towards a representative government. In contrast, the much more limited powers of the Cypriot Legislative assembly meant that all blame was focused on the British administration rather than the legislature. The preoccupation with raising taxation cost the government the support of the Turkish-Cypriot legislative councillors, who formed the basis of the 'divide and rule' tactics that enabled the government to bypass local opposition.

The Cypriot government's unwillingness to allow the legislative council to suggest policy in the 1920s had dangerous repercussions in 1931. The government was caught between the council's unpalatable demand to reduce the number of British bureaucrats and the colonial office's order to increase revenue. Governor Storrs was much more willing to provide government solutions for Cypriot agriculture, but he was not willing to let the legislative council decide the employment policy of the government. His decision to once again circumvent the Cypriot representatives through orders-in-council began a chain of events that led to the October riots. It was not the first time that the government used orders-in-council; what changed was the grievous and deteriorating economic situation in Cyprus during the depression, which added a sense of determined urgency to Cypriot actions. Even moderate Greek-Cypriot politicians, angry at the government's unwillingness to accept their demands and under pressure from their community due to the serious economic situation, were pushed to revolutionary actions. Thus, although the spark to the October 1931 riots was political, the causes of the political stalemate and of the subsequent riots were economic. The reaction of the British government to the 1931 riots in Cyprus was quite the opposite from their reaction after the Maltese riots in 1919: they led to a dual government, while the Cypriot riots led to authoritarian rule on the island.

The economic conditions heightened political tensions, but the colonial government was to blame for the riots due to its poor handling of the economic and political problems caused by the great depression. By ignoring the Cypriots' demands for government action, the colonial government missed a chance to defuse the rapid radicalisation of the Greek-Cypriot leadership. The October 1931 riots were the first step towards a path of conflict between Greek-Cypriots and the government that would eventually lead to the EOKA campaign of 1955. This did not only happen in Cyprus: the economic policies of the British colonial office strengthened the Indian Congress opposition against British rule which would eventually lead to the decolonisation of India[115]. The failure of British administrators to protect colonial inhabitants from the effects of the great depression laid the seed for decolonisation in colonies with established political representation.

[115] Rothermund. *The Global Impact of the Great Depression* (1996) p.95.

Chapter 9: Conclusion

"In the interwar period the collapse of growth in the European industrial centre did translate into an even poorer performance almost everywhere around the Mediterranean"[1]

Cyprus and Malta grew as slowly as other Southern European states despite not being negatively affected from the First World War: this was surprising as Greece, Bulgaria and Turkey began the period with substantial problems. Their growth was lacklustre, even though Malta benefited from substantial British military expenditure and Cyprus benefited from an expanding copper industry. Thus, Pamuk and Williamson's assertion of relatively poor growth in the Mediterranean vis-à-vis the advanced European centre was confirmed for Cyprus and Malta.

This thesis presents the first GDP estimates that were constructed in a systematic way. They indicate that during the period 1921-1938 annual per capita growth was 1.3% in Malta and 1.9% in Cyprus. Due to its faster growth rate, Cyprus managed to create a substantial per capita income gap over Malta by 1938, as the Maltese economy could not create sufficient employment for its increasing population[2]. Cyprus would have had much slower growth if the seams of copper at Skouriotissa and Mavrovouni were not discovered, since the rapid growth of the mining industry in the latter half of the 1930s was the main driver of Cypriot GDP growth. The potential for faster growth was there in both economies: Cypriot agriculture could have developed rapidly if grain acreage was converted into citrus plantations, and Malta could have grown faster if it diversified away from servicing the British military. The reasons why the islands failed to develop their potential are the key to understanding their performance.

The islands were not similar in structure, and thus they had a dissimilar development experience. Malta's GDP exhibited a stable and slow growth due to its dependence on British military expenditure. This insulated Malta from the effects of the great depression but made its economy vulnerable to political events that affected the expenditure of the British Mediterranean fleet. In contrast, Cyprus was dependent on agriculture and thus it experienced substantial output fluctuations, especially during the great depression, when the island experienced a prolonged and severe drought. Furthermore, the average income level of Cypriots and Malta combined was much

[1] Pamuk, & Williamson, *The Mediterranean Response...* (2000) p.63

[2] This corrects the misapprehension created by colonial officers, who assumed Malta was more advanced because it could better service their needs. This was never reconciled with the substantial income gap between Cyprus and Malta in the 1950s; the thesis indicates that such a gap could not have occurred unless the income gap between Cyprus and Malta began to expand as early as the 1930s.

lower than suggested by Maddisson's: the combined per capita GDP was similar to Bulgaria and Romania but poorer than Turkey or Greece.

Prior to this thesis it was not considered possible to estimate the islands' economic performance during this period. The GDP estimates presented have proved that the data environment is sufficiently dense for historical national accounts to be constructed. Although there were data constraints on some industries, the use of modern estimation methods, tailored to the specific data environments of Cyprus and Malta, led to comprehensive and reliable estimates of aggregate income. In fact, the methodology might be useful for other British colonies for which the information within their statistical (blue) books is deemed reliable.

Labour productivity, defined as GDP per economically active person, paints a fuller picture of the islands' performance. Productivity increased by an annual average rate of 2.4% in Malta and 2.1% in Cyprus during the period 1921-1938. The majority of the productivity increase in Malta was from those already in employment: there was no sector shift of employment, and employment was not rising despite the increasing population. Cypriot productivity growth was due to some farmers becoming productive miners, as well as the increasing productivity of labourers in the secondary and tertiary sectors. However the low productivity in Cypriot agriculture remained, becoming a restraint to productivity growth. The labour productivity estimates seem to imply two societies of "haves" and "haves not": labour participation rates were falling while those already in employment were becoming productive. Thus the islands were not capable to support the increasing population in regular employment during the interwar period. As a result the benefits of the islands lacklustre growth were only shared by those in employment, while a growing share of the population seemed not to be part of the economy's productivity advances.

The largest obstacle to faster growth in Cyprus was the prolonged crisis in agriculture. The output of agriculture was still important to the welfare of the economy, particularly since a poor agricultural year pulled other sectors in a recession. Economic growth could have been faster if the island's farming crisis was resolved, because a small improvement in agricultural performance would have a very positive impact on GDP growth due to the industry's size.

However, agricultural output remained stagnant due to the multitude of problems facing the industry. The problems were similar to those faced by other South European states such as the lack of irrigation investment, extensive land fragmentation and above all the interlinked problems of rural debt and a lack of farming credit. Nevertheless other South European states managed to

expand their agricultural output. What was different in Cyprus was the severity of the problems, combined with the reluctance of the colonial government to step in to solve them. *Independent* South European countries managed to intensify agricultural production by switching to labour-intensive products: this was aided by large-scale government intervention in terms of credit, investment and pricing. The same did not take place in Cyprus, despite the fact that a similar conversion to labour-intensive products was possible: the colonial government's policies towards irrigation, rural debt and farming credit were too limited to be effective.

The real cost of rural debt increased dramatically in Cyprus after 1921, as farmers who borrowed money to expand production during the First World War found it impossible to repay with the prevailing low prices of the interwar period. The amount of debt defaulted was so large that it eliminated a substantial part of the moneylenders' capital, which led to a restriction of lending, thus creating a vicious cycle of debt and default. This 'credit crunch' starved the agricultural industry of the credit necessary to intensify production during the interwar period.

Although the elected members of the legislative council pressed the government to enforce coordinated action to break the cycle of debt and scare credit, the island's first governor was unwilling to initiate policies that contravened the laissez-faire spirit: the Cypriot government proved to be much more reluctant than *independent* South European countries in providing solutions for the agricultural sector. Sir Stevenson's replacement was much more willing to help the industry, but the policies implemented by Sir Storrs were hampered by the need to avoid a government deficit: these ad-hoc and poorly planned policies failed to rejuvenate the farming industry, leading to the sector acting as a drag on the economy.

The fall of agricultural product prices due to the great depression occurred as crops failed because of the drought, placing the rural smallholders that made up the majority of the population under strain. Indebted, landless and under serious financial pressure, the grain farmers of the Mesaoria plain descended in Nicosia, catalysing Cypriot politics towards extreme actions. The hardening stance of the Cypriot leadership towards the colonial government led to a political stalemate that eventually led to riots against British rule. Cypriot legislators demanded that the government rein in British wage expenditure and establish additional programs to help rural smallholders, but the government's reluctance to implement this exacerbated the political tensions to the point of violence. It was only during the Second World War, when the stability of food production was threatened during wartime, that the colonial government actively intervened in the agricultural industry to successfully tackle the issues that held it back.

The drag on GDP growth caused by the stagnant agricultural industry was partially alleviated by the explosive growth of mining in the 1930s; without it, the per capita GDP growth of Cyprus for the period 1921-1938 would have been a dire 1% per annum[3]. The rise of copper mining in Cyprus is linked with the rise of the Cyprus Mining Company, an American company which transformed the island's economic and social structure. The output of copper mining was particularly impressive after 1934, as Cypriot copper mines became the chief suppliers of the German rearmament effort. The expansion of mining raised the GDP, but it did not provide sufficient employment opportunities to the underemployed farmers. In addition growth in terms of National Income was less than the growth of GDP, as foreign companies, like the CMC, expatriated substantial profits abroad.

The primary sector was not important for the Maltase economy. Ever since the island's occupation by Great Britain, its economic development and structure was shaped by its dependence on British armed forces expenditure. The primary sector constituted a very small section of the economy; the important sectors were the secondary sector, dominated by the Royal Navy Dockyard, and the tertiary sector, which catered to the needs of the armed forces. The dockyard was by far the largest employer and the largest industrial unit on the island, producing 12.6% of GDP in 1938. As dockyard output remained stable for the majority of the period, the economy of Malta was negatively affected in terms of output growth.

The reduction of British defence expenditure during the interwar period led to the very slow growth of the Maltese economy. The economy remained dependent on the Royal Navy, as exhibited by the deep recession that occurred when the British fleet withdrew in 1936. Malta needed to diversify its economy away from British defence expenditure in order to ensure its future economic development. The colonial office was aware of this, and it placed the problem on the hands of the new Maltese self-government. However, the self-government was not given the power to promote economic diversity, as it could not enforce its will on the British armed forces, which wanted to maintain Malta as a fortress economy.

Despite these island specific-problems, the relatively slow growth of Malta and Cyprus was in part due to common problems. In both countries the limitation of emigration opportunities at the start of the period had negative effects in terms of per capita GDP growth. The population grew faster than previously: if the increase of the population was kept at the pre-1921 level then the annual per

[3] Note: per capita growth rate of GDP with the output of mining removed. Source: Appendix B

capita GDP growth for the period 1921-1938 would have increased by an additional 0.67% in Malta and 0.13% in Cyprus.

In addition, the islands' small size was a disadvantage in the interwar period. Kuznets argued that small states could do well in turbulent economic periods either by relying on their resource endowments or by ensuring continued support from a greater economic power[4]. The experience of Cyprus and Malta indicates that things were not straightforward, as the islands' economic performance was poor despite these benefits. Countries dependent on mineral endowments are affected by global crises through falls of commodity prices. The Cypriot mining industry suffered a severe setback during the great depression as the copper price fell faster than other prices. Thus incomes of small states with significant resource endowments are more vulnerable during uncertain global trade conditions. Malta might have escaped the worst effects of the depression due to the expenditure of the British armed forces, but this expenditure also had significant negative effects: Maltese economic growth was a function of British defence policy just as aircraft technology undermined the island's usefulness to the British military. Therefore, in contrast to Kuznet's assertion, these economies did have significant negative repercussions to their economic performance because they were small in size; having a significant resource endowment or a strategic payoff did not compensate for the disadvantage of being small in the interwar period.

In fact, small island economies are "fair weather" performers that need a global expansion of trade in order to prosper. It is not surprising that Easterly and Kray seem to think that small states have "small problems"; their analysis is from 1960 to 1995, a period of uninterrupted trade liberalisation and rapid trade expansion, while the interwar was a period of protectionism and trade bilateralism[5]. The ability to trade goods and services enables these economies to overcome the serious disadvantages of their small size, particularly in developing manufacturing. In addition, these small islands cannot effectively implement protectionism policies, since the internal economy is too small to support industries with a large minimum efficiency scale, as the necessary duties would entail too high a cost to the islands' consumers. Unlike Greece or Turkey in the interwar period, the islands of Malta and Cyprus could not have managed to substantially stimulate domestic manufacturing through protectionist measures, since their internal market was too small. This sends a clear message to small island states: they should be the strongest proponents of free trade as

[4] See: Chapter 1, pp.13-14
[5] See: Chapter 1, p.13, footnote 24; Source: World Trade Organisation, "Information-World Merchandise Trade 1921-38" http://www.wto.org/gatt_docs/English/SULPDF/91320046.pdf as consulted 21 Dec 2009

protectionism reduces the ability of small island states to grow faster, particularly in terms of manufacturing.

Manufacturing growth was poor in the interwar period. The slow modernisation of industry in Cyprus and Malta was unfortunate as the manufacturing sector provided the largest opportunity for productivity enhancements in the interwar period. Europe assimilated the advances of the "second industrial revolution", yet without increasing trade liberalisation, Cyprus and Malta could not have modernised their industrial sector in order to assimilate this production-enhancing technology. The markets of Cyprus and Malta were too small to attract sufficient investment to modernise their existing industries; modern factory production could only be profitably established if one could trade the surplus. Thus small economic areas need trade liberalisation in order to complement their limited domestic market opportunities with export sales; this became increasingly difficult in the interwar period as traffic barriers were raised throughout the Mediterranean. At the same time, import duties in Cyprus and Malta remained low due to their status as British colonies and as a result, even the limited domestic market was eroded by imports: the islands' artisans could not compete with imported, factory-made, goods.

In chapter 1 it was suggested that some states are more vulnerable due to a greater exposure to exogenous shocks and several economic vulnerability indexes have been constructed to rank states by their vulnerability to sudden reversals of income[6]. The development of Cyprus and Malta after 1945 seemed to refute claims that small states are particularly vulnerable, since both managed to surpass serious exogenous shocks without long-term repercussions. Yet a capacity to withstand such shocks was not present in the interwar period. The Cypriot drought and the withdrawal of the British fleet from Malta greatly affected their output. Thus in order for an economic vulnerability index to be accurate it must take into account the level of development and the economic diversity of a state.

There is an interaction between economic vulnerability and economic development that has not been highlighted enough in the literature of economic vulnerability: as an economy develops and diversifies its output, the economy's ability to withstand exogenous shocks increases. Thus the ability of Malta and Cyprus to withstand substantial exogenous shocks in the second half of the twentieth century was related to the fact that their economies had developed and their sources of income were diversified. Consequently the changes to the economic vulnerability index suggested

[6] See Chapter 1, pp.13-14

by Briguglio and Galea are necessary, even if such changes introduce multicollinearity between the vulnerability index and GDP, limiting the usefulness of the index for regression analysis[7].

The service sector became the main economic driver for the islands' rapid catch-up after the Second World War, but it was not as dynamic in the interwar period. Although the data on the service sector are the least robust, it seems that trade was stagnant while the future drivers of the islands' economies (such as banking) were growing rapidly but from a very low starting base. The service sector was in need of modernisation that necessitated human capital investment, but the small size of Malta and Cyprus, combined with the low level of human capital, acted as a deterrent to the creation of specialised service providers.

Despite the limitations mentioned above, two service industries were transformed during the interwar period. Domestic banking services in Cyprus started from a low base in 1921, but by 1938 the Cypriot industry had already been through a period of expansion, consolidation and regulation, thus becoming well suited to fund domestic projects after the Second World War. The transportation industry was revolutionised by the dissemination of motorised vehicles. Both islands were starved of transport links prior to the introduction of regular bus services and the creation of a road network; their establishment created a demand for houses within commuting distance from the main urban areas, thus fuelling the construction boom that occurred in both islands.

The construction boom that began in the interwar period continued after the Second World War in both islands. It was mainly a housing boom, in part driven by the need for more housing for an increasing population, and by the creation of new suburban areas. In Malta the population density around the grand harbour was one of the highest in Europe, thus creating a strong demand for better, affordable housing that was accessible from the urban area. This rapid growth of the construction industry must have been the driver of increasing productivity in the secondary sector, as it compensated for the relatively poor performance of the other secondary sector industries.

The analysis of the interwar period makes it clear that the rapid growth of the islands after the Second World War was not a continuation of interwar growth, but that some important pre-requisites were in place by 1938. As Mayer and Vasiliou indicated, Cyprus already had in place several of the necessary elements which ensured rapid economic catch-up after the Second World War: the transport and finance industries were transformed and the copper mining industry

[7] Briguglio, L. & Galea V., "Updating and Augmenting the Economic Vulnerability Index" *Occasional Paper of the Islands and Small States Institute of the University of Malta* (2003)

underwent significant investment that enabled it to provide for the voracious copper demand during the global, post-1945 economic boom[8]. Malta's post-war economic growth had less to do with interwar developments since it remained attached to foreign military expenditure as its main source of income; however, the establishment of a regulated bus network ensured that the whole island could participate in the economic life of the grand harbour area even before the Second World War.

Both islands were disadvantaged by being British colonies during the interwar period. The main disadvantage was not due to the lack of trade protectionism, but due to colonial preference towards orthodox economic policy at a time of unorthodox economic turbulence. The Governors were under strict orders to ensure budget surpluses, but they also wanted to expand the bureaucracy. As a result, government revenue and expenditure in Cyprus and Malta grew faster than per capita GDP; however, the colonial government remained committed to the principle of non-intervention in the economy. To the dismay of Cypriot representatives, the increased government revenue was devoted to wage expenditure and not in government efforts to resolve the deepening agricultural crisis.

Unlike *independent* South European countries, which reluctantly swung towards greater economic intervention as global economic conditions deteriorated, the British colonial governments remained committed to a policy of balanced budgets, open markets and limited intervention during the great depression. In the unusual conditions of the interwar period such policies were a barrier to economic development, since the problems of Malta and Cyprus could only be solved through active government intervention. As a result the colonial governments did not give the answer to the issues affecting the islands' economic performances, and Cyprus and Malta missed the chance to grow faster than neighbouring states.

The focus on balanced budgets greatly limited the ability of the colonial governments to respond to the global economic crisis. This rigidity in economic policy led to violent riots in several parts of the British Empire, of which Cyprus was no exception; even Malta, which was largely insulated by the economic effects of the great depression, had its constitution suspended due to rising political tensions. The ultimate reason for the Cypriot riots may have been economic, but the colonial government was to blame: during the great depression the government was unwilling to tackle the economic problems of the local population, as demanded by their increasingly agitated representatives. Thus the great depression increased political tension to the point where conflict and violence became possible. If the colonial government took on board the wishes of the legislative council, the radicalisation of the Greek-Cypriot leadership and the subsequent riots might have been

[8] Mayer with Vassiliou, *The Economy of Cyprus* (1962) p.11

avoided. The failure of cooperation between the government and the Greek-Cypriots in 1931 ensured tragic consequences for the future, with the formation of organised resistance after the Second World War.

Bibliography

Acronyms:

GPO = Government Printing office
HMSO= Her Majesty's Stationary Office

Primary Materials:

Newspapers and Interviews:

Φωνή της Κύπρου [Voice of Cyprus]

Ελευθερία [Liberty]

Malta Today

Interview with Mr. Antonis Polydorou, a client of the Ionian Bank in Cyprus. He was a client from 1926 until late 1930s. Interview taken on 27 Dec. 2006

Interview with Mr. Georgios Kyprianou, Former secretary of the Agros Village Co-operative in the 1930s, and owner of a traditional wine still in the 1980s. Interview taken at 18th of July 2008.

Interview with Mr. Pambos Kanaris, Cyprus Wine Products Commission. Interview taken at 18th of December 2006

Archives:

British Library of Political and Economic Science, Holborn, London

IB3: Ionian Bank archives, Court of Directors' minutes.
IB6: Cyprus branches and Reports of P.N. Caridia, the bank's General Manager.

English National Archives, Kew, London

CO67: Colonial Office: Cyprus, Original Correspondence
CO69: Colonial Office: Cyprus, Sessional Papers.
CO70: Colonial Office: Cyprus, Government Gazettes.
CO456: Colonial Office: Cyprus, Miscellanea.
CO158: Colonial Office: Malta, Original Correspondence
CO161: Colonial Office: Malta, Sessional Papers.
CO162: Colonial Office: Malta, Government Gazettes.
CO163: Colonial Office: Malta, Miscellanea.
FO371: Foreign Office: Political Departments: General Correspondence from 1906-1966
ADM116/ 3660, 5390: Admiralty: Record Office: Cases
ADM1/20578: Dockyards and naval establishments (41): Locally entered workpeople employed on dockyard craft Malta: rates of pay.

Alexander Apostolides

Cyprus National Archives, Nicosia

SA1: Colonial Secretarial Archive.
V5: Unpublished Government Manuscripts
V53: Ministry of Finance: Statistical office publications

Cyprus Ministry of Agriculture Library, Nicosia

The Cyprus Agricultural Journal

Maltese National Archives, Rabat

PW: Public works Section Public Works: files noted separately in the footnotes.
GMR: Government of Malta Records
Hirst Private Papers: Papers of the Director of Agriculture in the 1930s.

University of Malta Library, Msida

Melitensia Collection: Unpublished dissertations of the University of Malta.

British Library, London

British parliamentary papers:
Command 4045, "Disturbances in Cyprus in October 1931" *Reports from Commissioners, Inspectors and Others: vol.VI session 03/11/1931 to 17/11/1931* pp.504 – 544

Command 2150, "Report of the Royal Commission on the Constitution of Malta" *in Reports from Commissioners, Inspectors and Others: Vol. VI session 03/11/1931 to 17/11/1931* pp. 803-1043

Command 6090, "Finances, economic position and judicial procedure: Report of the royal commission on the finances economic position and judicial procedure of Malta 1912-1913"

Published and Unpublished Manuscripts and Statistical sources:

Advisory Council of Cyprus, *The Current Supply, Transport and Marketing Situation in Cyprus*, (Nicosia: GPO, 1947)

Antoniades, A., Mavrogenis, A.P, & Papayiannis, C., *Part-time Farming in Cyprus,* (Nicosia: Agricultural Research Institute, 2001)

Apostolides. A., *Why did the Ionian Bank Enter the Cyprus Market in 1926-1927? A Case-Study of a British Overseas Bank in the Interwar period* (Unpublished MSc dissertation, London School of Economics, 2005)

Bevan, W., *Notes on Agriculture in Cyprus and its Products,* (Nicosia: 1919)

Central Office of Statistics, Malta, *Report on the Census of Agriculture, 1956,* (Valletta: Department of Information and Tourist Services, 1957)

Central Office of Statistics, Malta, *Census of Production for 1955*, (Valletta: Department of Information and Tourist Services, 1956)

Central Office of Statistics, Malta, *National Accounts of the Maltese Islands 1954–1963*, (Valletta: Department of Information, 1964)

Central Office of Statistics, Malta, *National Accounts of the Maltese Islands 1966*, (Valletta: Department of Information, 1967)

Constantinou, A., *Ruminant Livestock: Genetic Resources in Cyprus*, (Nicosia: unpublished, 1981)

Cyprus, *Report and General Abstracts of the Census of 1911* (London: Waterlow, 1912)

Cyprus, *Statistical (Blue) Books*. (Nicosia: GPO, 1921-1946) A yearly publication comprising of the most important statistical information, published under Colonial Office standards.

Cyprus, *Minutes of the Legislative Council of the session of ...* (Nicosia: GPO, 1921-1931) A yearly publication of the minutes of the Legislative council

Cyprus, *Census of Cyprus 1946: Report on Housing in the Six District Towns (Construction, Services, etc.)*, (Nicosia: Census Office, 1948)

Cyprus, *National Income: Product, Income, Expenditure 1950*, (Nicosia: Secretariat, 1951)

Cyprus, *Cyprus Economic Review 1955–1956*, (Nicosia: GPO, 1957)

Demetriades, E.I., *Census of cottage industry 1982*, (Nicosia: Statistical Service, 1983)

Ellul, M., *H.M. Naval Dockyard, Malta: Society Work and Industrial Relations in a British Naval Base, 1900–1939*, (Unpublished M.A, University of Malta, 2004)

Eurostat, *GDP per Capita in Purchasing Power Standard* http://epp.eurostat.cec.eu.int/ as consulted 10 Mar 2006

Federico, G., "Italy", in Lains P. & Pinilla V. (eds), *Agriculture and Economic Development in Europe*, (Routledge, forthcoming)

Fenoaltea, S., *Italian Industrial Production, 1861-1913: A Statistical Reconstruction. Part B. Extractive Industries*, (Unpublished, 2007)

Hart-Davis, C.H., *Cyprus Report of the Census of 1921 Taken on April 24th, 1921*, (London: Dunstable & Watford, 1922)

Hart-Davis, C.H., *Cyprus Report of the Census of 1931 Taken on April 27-28th, 1931*, (Nicosia: Passingham, 1932)

Heston, A. & Lipsey, R.E., *International and Inter-area Comparisons of Income, Output and Prices*, (Chicago & London: The University of Chicago Press, 1999)

Heston, A., Summers, R. & Aten, B., "The International Comparison of Prices Program (ICP), Version 6.1" *Penn World Table* (Pennsylvania, PA: CICUP, 2002)
http://pwt.econ.upenn.edu/icp.html as consulted 20 Jun 2007

Ivanov, M., *Bulgarian National Income 1892–1924: 60 years Later or Quarter of a Century Earlier*, (Unpublished, 2007)

Kunert, H. & Yiassemides, P., *Norm Input-Output Data of Some Crop and Livestock enterprises of Cyprus,* (Nicosia: Cyprus Agricultural Research institute, 1966)

Maddison, A., *Statistics on World Population, GDP and Per Capita GDP, 1-2006 AD,* http://www.ggdc.net/maddison/ as consulted 10 Mar 2009.

Malta, *Statistical (Blue) Books*. A yearly collection of the most important statistical information on Malta. Published under Colonial Office standards.

Malta, *Eleventh Census of the Maltese Islands 1948* (Valletta, Progress, 1949)

Malta, *Census of the Maltese Islands 1931,* (Valletta, GPO, 1932)

Malta, *Report of the Census of the Maltese Islands 1921* (Valletta: GPO, 1922)

National Statistics Office: Malta, National Accounts (Old System)
http://www.nso.gov.mt/site/page.aspx?pageid=57 as consulted 8 May 2006.

National Statistical Office of Malta, *Census of Population and Housing 2005, Volume 1* (Valletta: National Statistical Office, 2007)

National Statistics Office, National Accounts Finalisation of GDP data: Malta 1995–2003, *NSO News Release,* No.96 (2007)

Potts, H.W., *Lecture on the Improvement of Livestock and Agriculture in Malta Delivered at the Palace on the 6th February, 1930,* (Malta: GPO, 1930)

Raeburn, C., *Government of Cyprus, Water supply and irrigation departments: Water Supply in Cyprus: a General Report, Revised Edition,* (Nicosia: GPO, 1945)

Republic of Cyprus, *Census of Population and Agriculture 1960,* (Nicosia: GPO, 1962)

Republic of Cyprus, *Economic Review 1961,* (Nicosia, GPO, 1963)

Republic of Cyprus, *Distribution Survey 1969: Wholesale and Retail Trade* (Nicosia: Ministry of Finance, 1971)

Republic of Cyprus, *Agricultural Census 1977* (Nicosia, Ministry of Agriculture, 1978)

Republic of Cyprus, *Statistical Pocket Book No.1: The Cyprus Economy in Numbers (1950–1975) and Main socio-economic Indicators* (Nicosia: Statistics and Research Department, 1978)

Republic of Cyprus, *Statistical Pocket Book No.2: The Cyprus Economy in Figures (1950–1978) and Main socio-economic indicators,* (Nicosia: Statistics and Research Department, 1980)

Republic of Cyprus, *Input-Output table of Cyprus for 1981,* (Nicosia: Statistics and Research Department, 1988)

Republic of Cyprus, *Agricultural Statistics 2000,* (Nicosia: Statistical Service, 2001)

Republic of Cyprus, *Census of Population and Agriculture 1960* (Nicosia: GPO, 1962)

Republic of Cyprus, *Statistical Service Press Release* 06/10/2008. http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/FC5F3AB325D6BEEAC22574D7002DB767?OpenDocument&sub=1&e= as consulted 17 Dec 2008

Pamuk, S. "Agriculture and Economic Development in Turkey 1870–2000" in Lains P. & Pinilla V. (eds.) *Agriculture and Economic Development in Europe since 1870* (Routledge: Forthcomming)

Percival, D.A., *Cyprus, Census of Population and Agriculture 1946: Report and Tables,* (Nicosia, GPO, 1947)

Smits, J.P, Woltjer, P.J., and Ma, D., 'A Dataset on Comparative Historical National Accounts, ca. 1870-1950: A Time-Series Perspective', *Groningen Growth and Development Centre Research Memorandum* (2009),

Stockdale, F.A., *Report on the Present Condition of Agriculture in the Maltese Islands* (Malta: GPO, 1934)

Surridge, B.J., *Annual report of the department of co-operation 1937,* (Nicosia: GPO, 1938)

The Conference Board and Groningen Growth and Development Centre, *Total Economy Database*, http://www.conference-board.org/economics as consulted 20 Oct 2008

PhD Theses

Charlton, W. A., *Trends in the Economic Geography of Malta since 1800,* (PhD Thesis: University of Durham, 1960)

Richardson, M., *Aspects of Demography of Modern Malta*, (PhD Thesis: University of Durham, 1960)

Verropoulou, G., *The Demography of Cyprus 1881 – 1982*, (PhD Thesis, University of London, 1997)

Secondary Sources

Abramowitz, M., "The Catch-up Factor in Post-war Economic Growth. Presidential Address to the Western Economic Association, 21 June, 1989", *Economic Inquiry* Vol.XXVIII, (1990) pp.1-18

Abela, M., *Malta, a Developing Economy*, (Malta: Central Office of Statistics, 1963)

Acemoglu, D., Johnson, S. & Robinson, J.A., "The Colonial Origins of Comparative Development: An Empirical Investigation", *The American Economic Review,* Vol.91, No.5 (2001) pp.1369 – 1401

Aerts, E., and Valério, N. *Growth and Stagnation in the Mediterranean World* (Leuven: Leuven University Press, 1990)

Αγκαστινιώτης K.M. [Agastinotis, K.M.], *Ο Συνεργατισμός: Γέννηση και Ανάπτυξη του εν Κύπρω* [Co-operatism: its Birth and Development in Cyprus], (Nicosia: 1965)

Agathangelou, A., *Mortality in Cyprus,* (Nicosia: Ministry of Finance, 1985)

Aldcroft, D.H., *Studies in the Interwar European Economy,* (Aldershot: Ashgate, 1997)

Amery, L.S., *My Political Life: Vol.2 War and Peace 1914-1929,* (London: Hutchinson, 1953)

Amery, L.S., *My Political Life: Vol.3 The Unforgiving Years 1929-1940,* (London: Hutchinson, 1955)

Antoniou, A., Athanassiou, E. & Kostelenos, G., "Economic Growth in Greece 1833-1939: A Tentative Endogenous Growth Approach", *International Workshop on Modern Economic Growth and Distribution in Asia, Latin America and the European Periphery,* (2001)

Apostolides, A., and Apostolides C. "Introducing Cyprus in the Economic Debate: The Resilience of Cypriot Agriculture in the 20th century 1921–2000" in Hendrickson, K.E., and Pappas, N.C, *Interpreting the Past: Essays from the 4th international conference on European History* (Athens: ATINER, 2007), pp.271-286

Apostolides, A., "How similar to south-eastern Europe were the islands of Cyprus and Malta in terms of agricultural output and credit? Evidence during the interwar period", *Working Paper, Bank of Greece,* (2008) no.80

Apostolides. A., "Foreign Banking Entry in Cyprus: History Lessons in Strategy" presented in *The Critical Function of History in Banking and Finance*, European Association of Banking History Conference, Nicosia, (2009)

Apostolides, C., *The Role of Agriculture in the Economic Development and Trade in Cyprus 1879 – 1971,* (Nicosia: EMS Economic Management, 1980)

Baer, L.M., *The Mineral Resources and Mining Industry of Cyprus,* (Nicosia: Ministry of Commerce and Industry, 1963)

Balogh, T., & Seers D., *The Economic Problems of Malta: An interim Report* (Malta: GPO, 1955)

Bank of Cyprus Cultural Foundation, "110 moments in our History" http://www.boccf.org/main/default.aspx?mid=199&TabID=43&ItemID=226 as consulted 12 Dec 2009

Bassino, J.P & Van der Eng, P. "Economic Divergence in East Asia: New Benchmark Estimates of Levels of Wages and GDP, 1913-1970" *XIII IEHC, Buenos Aires* (2002)

Benians, E.A., Bulter, J., Carrington, C.E. (eds.) *The Cambridge History of The British Empire: Volume III* (Cambridge: Cambridge University Press, 1967)

Bond, B. & Williamson, M., "The British Armed forces 1918-1939" in Millet, A.R. & Williamson, M. (eds.) *Military Effectiveness, Vol.II: The interwar period* (London, Allen & Unwin, 1988) pp.98-131.

Bonnano, N.S., *Capital, Accumulation and Economic Growth: In Theory and as they Relate in the Maltese Paradigm,* (Fribourg: University of Fribourg, 1989)

Bonnici, J. & Cassar M., *The Malta Grand Harbour and its Dockyard,* (Malta: Gutenberg Press, 1994)

Bonnici, J. & Cassar M., *A Chronicle of Twentieth Century Malta,* (Malta: Book Distributors ltd, 2004)

Bowen-Jones, H., Dewdney J.C., & Fisher W. B., *Malta: Background for Development,* (Durham: Department of Geography, 1961)

Briguglio, L., "Island Economies: Plans, Strategies and Performance: Malta" *Economics Division Working Papers, Research School of Pacific Studies, Australian National University, Canberra,* (Australian National University, 1992)

Briguglio, L., "The Vulnerability Index and Small Island Developing States: A Review of Conceptual and Methodological Issues", (2003) http://www.sidsnet.org/docshare/other/20031024170308_vulner_paper_30_sep03.doc as consulted 10 Oct 2006

Briguglio. L., & Eliawony, K.J., *Economic Vulnerability and Resilience of Small States,* (Blata l-Bajda: Formatek ltd, 2004)

Briguglio, L. & Galea V., "Updating and Augmenting the Economic Vulnerability Index" *Occasional Paper of the Islands and Small States Institute of the University of Malta* (2003) http://home.um.edu.mt/islands/eviar_briguglio_galea_ver4.pdf as consulted 20 Dec 2007

Broadberry, S. & Sayanthan G., "From the Counting House to the Modern Office: Explaining Anglo-American Productivity Differences in Services, 1870-1990" Journal of Economic History, Vol.62, No.4 (2002)

Broadberry, S., *Market Services and the Productivity Race, 1850-2000,* (Cambridge: Cambridge University Press, 2006)

Brown, I., *The Economies of Africa and Asia in the inter-war depression* (Padstow: T.J. Press, 1989)

Busuttil, S., "Agriculture in Malta: A historical note" *Options Mediterraneennes,* Sér. B., no. 7 (1993) pp.10 - 26

Buyst, E., Smits, J.P.H., & Van Zanden, J.L., "National accounts for the low countries 1800 – 1990" *Scandinavian Economic History Review,* Vol.XLIII No.1, (1995) pp.53-76

Caircross, A. & Puri, M. (eds.) *Employment, Income Distribution and Development Strategy* (London: Macmillan, 1976) pp.25-42.

Castillo, D., *The Maltese Cross: a Strategic History of Malta,* (Westport: Praeger Security International, 2006)

Charalambous, J., & Georgallides G.S., (eds.), *Focus on Cyprus,* (North London University: University of North London Press, 1993)

Christensen, J. P., Hjerppe, R. & Krantz, O. " Nordic National Accounts since the 1880s" *Scandinavian Economic History Review* Vol. XLIII, No.1 (1995) pp.30-52,

Christodoulaki, I., "Industrial growth revisited: Manufacturing output in Greece in the interwar period" *Working Paper London School of Economics, Department of Economic History*, no. 50 (1999)

Christodoulou, D., *The evolution of the rural land use pattern in Cyprus* (Bude, Geographical Publication Ltd, 1959)

Christodoulou, D., *Contributions towards a Development Plan for Cyprus Agriculture* (Nicosia, ROC, 1960)

Christodoulou, D., *Inside the Cyprus Miracle: The Labours of an Embattled Mini- Economy*, (Minneapolis, MN: University of Minnesota, 1992)

Clark, C., *The Conditions of Economic Progress*, (London: Macmillan, 1940)

Clark G.L., & Feldman, M.P., *Oxford Handbook of Economic Geography*, (Oxford: Oxford University Press, 2000)

Coase, A.S., "The Closing of the Malta Railway" *The Railway Magazine*, (July, 1934) www.maltarailway.com/history/rm1934.pdf as consulted 09 Dec 2008.

Coghlan, F., "Armaments, economic policy and appeasement. Background to British foreign policy, 1921–7" *History*, Vol.57, (2007) pp.205-216

Cohen, J. & Federico, G., *The Growth of the Italian Economy 1820 – 1960* (Cambridge: Cambridge University Press, 2001)

Consiglio, J.A., *A History of Banking in Malta*, (Valletta: Progress Press, 2006)

Crafts, N.F.R., "Recent Research on the National Accounts of the UK 1700–1939", *Scandinavian Economic History Review*, Vol. XLIII (1995) p.17- 29

Crafts, N.F.R., "The Golden Age of Economic Growth in Europe, 1950-1973" *The Economic History Review*, Vol.48 No.3 (1995) pp. 429–444

Crawshay, I.R., *An investigation into the Cypriot sponge fishing industry*, (Nicosia: GPO, 1930)

Cyprus, The Mines Regulation 1926: Cyprus (Nicosia: GPO, 1926)

Cyprus, *Report of the Commission appointed to enquire into the System of Taxation in Cyprus*, (Nicosia: GPO, 1930)

Cyprus, *Report of the Committee appointed to study the Conventions and Recommendations adopted by the International Labour Conference at its Tenth and Eleventh Sessions and to report on the possibility of applying the Conventions in the Colony of Cyprus*, (Nicosia: GPO, 1932)

Cyprus, *Report on the Activities of the Debt Settlement Board*, (Nicosia: GPO, 1945)

Dean, P., *The Measurement of Colonial National Incomes: an Experiment*, (Cambridge: Cambridge University Press, 1948)

Dilley, A.R., "The Economics of Empire" in Stockwell, S., (ed.) *The British Empire: Themes and Perspectives,* (Oxford: Blackwell publishing, 2008)

Dockyard and Imperial Workers Union (Malta), *Memorandum* (Valletta: Empire Press, 1943)

Droulia, L. & Koutsopanagou, G. (eds.), Εγκυκλοπαίδεια του Ελληνικού τύπου 1784-1974, [Encyclopaedia of the Greek Press 1784-1974] (Athens: Institute of modern Greek research, 2008)

Drummond, I.M, *British economic policy and the empire in 1919–1939* (New York, Barnes & Noble, 1972)

Easterly, W. & Kraay A., "Small States, Small Problems? Income , Growth and Volatility in Small States", *World Development*, Vol.28, No.11, (2000) p.2013 - 2027

Eichengreen, B., (ed.), *The Gold Standard in Theory and History,* (New York: Methuen, 1985)

Electricity Authority of Cyprus, "The History of Electricity in Cyprus and the Electricity Authority of Cyprus (EAC)" http://www.eac.com.cy/EN/ourorganization/Pages/History.aspx as consulted 10 Jun 2009

Ellis, W.M., *Report on improving and extending irrigation works in Cyprus* (Nicosia: GPO, 1922)

Ellul, M., "Maltese Imperial mentalities: Subjecting the Maltese Mind To Imperial Rule" *Storja* (1998), pp.95-114

Eloranta, J., "Military Spending in History", http://eh.net/encyclopedia/eloranta.military as consulted 10 Sep 2009

Eurostat, *European System of Accounts ESA 1995,* (Luxembourg: Eurostat, 1996)

Eurostat, *NACE Rev.2: Statistical Classification of Economic Activity,* (Luxembourg: Eurostat, 2008)

Eurostat, *NACE Rev. 2-CPA 2008* http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/ as consulted as consulted 10 November 2007.

Fagerberg J., "Technological Progress, Structural Change and Productivity Growth: A Comparative Study", *Structural Change and Economic Dynamics* (2000) vol.11 pp.393-411

Farrugia, C. "The Special Working Environment of Senior Administrators in Small States" *World Development*, (1993) Vol.21, No.2, pp.221-226

Faustman, H. & Peristianis, N. *Britain in Cyprus: Colonialism and Post-Colonialism 1878–2006* (Biliopolis: Mannheim & Möhnesee, 2006)

Federico, G., *Feeding the World: An Economic History of Agriculture 1800–2000,* (New Jersey: Princeton University Press, 2005)

Federico, G., "Not guilty? Agriculture in the 1920s and the Great Depression", *The Journal of Economic History*, Vol.65, No.4, (December 2005) pp.949 - 976

Fieldhouse, D.K., "'Imperialism': An Historiographical Revision", *The Economic History Review, New Series,* Vol.14, No.2, (1961), pp.187-209

Feinstein, C.H., *National Income Expenditure and Output in the United Kingdom 1855–1965,* (Cambridge: Cambridge University Press, 1972)

Feinstein, C.H. & Pollard, S., *Studies in Capital Formation in the United Kingdom 1750–1920,* (Oxford: Oxford University Press, 1988)

Feinstein, C.H., Temin, P. & Toniolo, G., *The European Economy Between the Wars,* (Oxford: Oxford University Press, 1997)

Feinstein, C.H. & Thomas M., "A Plea for Errors", University of Oxford, *Discussion Papers in Economic and Social History,* (2001), no.41.

Felner, F. "Das Volksvermögen Österreichs and Ungarns" [The national Wealth of Austria and Hungary] *Bulletin de L'Institut International de Statistique* Tome XX–2e Livraison (1915), pp.503–573

Fenech, D., *Responsibility and Power in Inter-war Malta. Book One: Endemic Democracy 1919–1930* (San Gwann: PEG, 2005)

Fenoaltea, S., "Real Value Added and the Measurement of Industrial Production", *Annals of Economic and Social Measurement,* Vol.5, No.1, (1976) pp.111-137

Fenoaltea, S., "Notes on the Rate of Industrial Growth in Italy, 1861-1913", *The Journal of Economic History,* Vol.63, No.3, (2003) pp.695-735

Fenoaltea, S., "The Growth of the Italian Economy, 1861-1913: Preliminary second-generation estimates", *European Review of Economic History*, Vol.9, (2005), pp.273-312

Fenoaltea, S., "The Reconstruction of Historical National Accounts: The Case of Italy", *International Economic History Conference (IEHC) Helsinki,* Session 103: New Experiences with Historical National Accounts, (2006)

Floud, R., and McCloskey, D., *The Economic History of Britain Since 1700 (second Edition): Volume 2 1860-1939* (Cambridge, Cambridge University Press, 1994)

Frendo, H., "Italy and Britain in Maltese Colonial Nationalism", *History of European Ideas*, Vol.15, No.4/6, (1992) p.733–739

Frendo, H., "Everyday Life in 'British Malta'", *Storja,* (1996), p.37-47

Gallagher, J. & Robinson R., "The Imperialism of Free Trade", *The Economic History Review, New Series,* Vol.6, No.1, (1953), pp.1-15

Geddes, P., "Cyprus and Some of its possibilities" in *The Isle of Man, Gibraltar, Malta, St Helene, Barbados, Cyprus, The Channel Islands,* (London: Kegan Paul, Trench, Trubner & co ltd, 1902)

Georghallides, G.S., *A Political and Administrative History of Cyprus 1918-1926,* (Nicosia: Zavallis Press, 1979)

Georghallides, G.S., *Cyprus and the Governorship of Sir Ronald Storrs: The Causes of the 1931 Crisis,* (Nicosia: Cyprus Research Centre, 1985)

Greaves, J.B., *Report on Economic Conditions in Cyprus and Malta, with a Note on the Trade of Gibraltar,* (London: HMSO, 1935)

Goldman, D. "Jewish Settlers in Cyprus during the British rule, 1880-1940s" *Journal of Cyprus Studies* (2006), http://www.highbeam.com/doc/1G1-164327863.html as consulted 5 June 2009

Grilli, E. & Maw, C.Y., "Primary Commodity Prices, Manufactured Goods Prices and the Terms of Trade of Developing countries: What the Long Run Shows", *World Bank Economic Review,* Vol.2, (1988) pp.1-47

Grytten, O.H., (ed.), *Nordiske Historiske Nasjonalregnskaper. Historical National Accounts. Proceedings Workshop IV, Solstrand, November 13-15th, 1998*, (Noway: Powerprint, 1999)

Grytten, O.H., "Fixed Price Calculations in Nordic National Accounts", *IEHC Helsinki*, Session 103: New Experiences with Historical National Accounts, (2006)

Gudmundur, J., (ed), *Nordic Historical National Accounts: Proceedings of Workshop VI Reykjavik 19-20 September 2003,* (Reykjavik, Institute of History, University of Iceland, 2003)

Guido, M.R, (ed.), *I Conti Economici Dell'Italia: 1. Una Sintesi Delle Fonti Ufficialli 1890 – 1970* [The National Accounts of Italy: A summary of Official Sources 1980-1970], (Roma–Bari, Editori Laterza, 1991)

Guido, M.R, (ed.), *I Conti Economici Dell'Italia: 2. Una Stima Del Valore Aggiunto Per Il 1911* [The National Accounts of Italy: An estimate of Value Added for 1911], (Roma–Bari, Editori Laterza, 1992)

Guido, M.R., (ed.), *I Conti Economici Dell'Italia: 3' Il Valore Aggiunto Per Gli Anni 1891, 1938, 1951* [The National Accounts of Italy: An estimate of Value Added for 1891, 1938, 1951], (Roma–Bari, Editori Laterza, 2000)

Guido, M.R., (ed.), *I Conti Economici Dell'Italia: 3'' Il Conto Risorse E Impieghi (1891, 1911, 1938, 1951* [The National Accounts of Italy: The uses and resources of 1891, 1911, 1938, 1951], (Roma–Bari, Editori Laterza, 2002)

Haas, J.M., *A Management Odyssey: The Royal Dockyards 1714-1914* (Maryland: University Press of America, 1994)

Hadjilyra, A.M., *The Cyprus Government Railway 1905-1951,* (Nicosia: Latsia Municipality, 2006)

Hald, M.W., *A Study of the Cyprus Economy* (Bellapais: 1968)

Harvey, C.E., *The Rio Tinto Company: An economic history of a leading international mining concern 1873 – 1954* (Penzance: Alison Hodge, 1981)

Hill, G. *A history of Cyprus: Volume III* (Cambridge: Cambridge University Press, 1948)

Hill, G., *A History of Cyprus: Volume IV* (Cambridge: Cambridge University Press, 1952)

Hjerppe, R., Hjerppe, R., Mannermaa, K., Niitamo, O.E., Siltari, K. *Suomen Teollisuus ja Teollinen Käsityö 1900-1965* [Industry and Industrial Handicraft in Finland] (Statistics Finland, Helsinki, 1976)

Hjerppe, R., *Finland's Historical National Accounts 1860-1994: Calculation Methods and Statistical Tables,* (Helsinki: Bank of Finland, 1996)

Hjerpe, R. "Understanding Economic Development Through Historical National Accounts" in Grytten, O.H. (ed.), *Nordic Historical National Accounts Proceedings of Workshop, IV* (Bergen: NHH, 1998) pp.81–pp.97

Hodge, J.M., *Triumph of the Expert–Agrarian Doctrines of Development and the Legacies of British Colonialism,* (Athens: Ohio University Press, 2007)

Holland, R. & Markides D., *The British and the Hellenes: Struggles for Mastery in the Eastern Mediterranean 1850-1960,* (Oxford: Oxford University Press, 2008)

Hyam, R. *Britain's Declining Empire: The Road to Decolonisation 1918-1968* (New York: Cambridge University Press, 2006)

Ivanov, M. & Tooze A., "Convergence or Decline on Europe's South-eastern Periphery? Agriculture, Population, and GNP in Bulgaria, 1892–1945", *Journal of Economic History*, Vol. 67, No.3, (2007) pp.672 - 704

Jalava. J. *Essays on Finnish Economic Growth and Productivity 1860-2005* (Helsinki: Statistics Finland, 2007)

James, H.H. & Koumides C.C., "An analysis of farming costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXIV, Part.2, (1939) pp.45-67

James, H.H. & Koumides C.C., "An analysis of farming costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109

Jenness, D., *The Economics of Cyprus: A Survey to 1914,* (Montreal: McGill University Press, 1962)

Karageorghis, V. & Michaelides, D. (eds.) *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day* (Nicosia: University of Cyprus, 1996)

Karouzis G., *Land consolidation in Cyprus 1970–1990,* (Nicosia: Ministry of Agriculture and Natural Resources, 1991)

Kauppila, J. *The Structure and Short-Term Development of Finnish Industries in the 1920s and 1930s: An Input-output Approach* (Helsinki: Statistics Finland, 2007)

Kesner, R.M., "Britain and the Rehabilitation of the Cyprus Economy" *The Journal of European Economic History,* Vol.7, No.1, (1978) pp.169–190,

Koudounaris, A.L. *Βιογραφικόν Λεξικόν Κυπρίων1800-1920* [Biographical Dictionary of Cypriots] (Λευκωσία: Ίδρυμα Πιερίδη, 1989)

Kostelenos, G., *Money and Output in Modern Greece, 1858–1938,* (Athens: Kepe, 1995)

Kostelenos, G., Vasiliou D., Kounaris E., Petmetzas S. & Sfakianakis M., *Ακαθάριστο Εγχώριο Προιόν 1830–1939* [Gross Domestic Output], (Athens: Kepe, 2007)

Kostis, K., *Αγροτική Οικονομία και Γεωργική Τράπεζα: Όψεις της Ελληνικής Οικονομίας το Μεσοπόλεμο. Τομ.* 1 & 2 [Agricultural Economy and Agricultural Bank: Visions of the Greek Economy in the Interwar Period. Vol. 1 & 2], (Athens: Cultural Institute of the National Bank of Greece, 1990)

Kostis, K., *Συνεργασία και Ανταγωνισμός: Τα 70 Χρόνια της Ένωσης Ελληνικών Τραπεζών* [Cooperation and Competition: The 70 years of the Union of Greek Banks], (Athens: Alexandra, 1997)

Kostis, K., & Petmezas, S., "Growth and Stagnation in the Greek Economy, 1830–1940" http://www.ims.forth.gr/ims/history_studies/agrotiki_oikonomia/GreekEconomy.pdf as consulted 12 Dec 2007

Kostas, K. & Petmetzas, S. (eds.) *Η Ανάπτυξη της Ελληνικής Οικονομίας κατα το 19^{ο} Αιώνα 1830–1914 [The growth of the Greek Economy during the 19th Century]* (Athens: Alexandria, 2006)

Krantz, O., "Service production in Historical National Accounts" *Review of Income and Wealth* Vol.40, No.1, (1994) pp.19 - 41

Kuznets, S., "Economic Growth and Income Inequality", *The American Economic Review*, Vol.45, No.1, (1955) pp.1-28

Kuznets, S., *Modern Economic Growth: Rate, Structure, and Spread,* (New Haven: Yale University Press, 1966)

Lanitis, N. C., *Rural Indebtedness and Agricultural Co-operation in Cyprus (Revised edition)*, (Limassol: Proodos Printing and Publishing Ltd, 1944; revised 1992)

Laquiller, F. & Blades, D., *Understanding National Accounts*, (Paris: OECD, 2007)

Lavender, D., *The Story of Cyprus Mines Corporation*, (San Marino, CA: The Huntington Library, 1962)

Le Nay, J. & Mathis J., "the Impact of Drought on the National Accounts for Livestock in Sahelian Countries" *Review of Income and Wealth*, Vol.35, No.2, (June 1989) pp.209-224

Maddison., A., *Two Crises: Latin America and Asia 1929-1938 and 1973-83* (Paris: OECD, 1985)

Maddison, A., *Monitoring the World Economy 1820–1995*, (OECD, Paris, 1995)

Maddison, A., *The World Economy: A Millennial Perspective*, (Paris: OECD, 2001)

Mallia-Milanes, V., (ed.), *The British Colonial Experience the Impact on Maltese Society* (Minerva Publications, The Free University of Amsterdam, 1988)

Malta, *Report on the Working of the Department of Agriculture during October 1938 to September 1946 and the Agricultural year 1946–1947*, (Malta: GPO, 1949)

Malta Labour Party, *The Maltese Economy*, (Hamrun: Malta Labour Party, 2001)

Mathias, P., Postan, M.M., Clapham, J.H., Pollard, S., Rich, E.E.. Habakkuk, H.J., Power, E.E., *The Cambridge Economic History of Europe: The Development of Economic and Social Policies* (Cambridge, Cambridge University Press, 1989)

Matthews, R.C.O, Feinstein, C.H., Odling-Smee, J.C, *British Economic Growth 1856-1973* (Stanford: Stanford University Press, 1982)

Mayer, A.J., *Middle Eastern Capitalism: Nine Essays*, (Cambridge, MA: Harvard University Press, 1959)

Mayer, A.J. with Vassiliou, S., *The Economy of Cyprus*, (Cambridge, MA: Harvard University Press, 1962)

Mazower, M., *Greece and the Interwar Economic Crisis* (Oxford: Clarendon Press, 1991)

Meinen, G., Verbiest, P. & De Wolf, P. *Perpetual Inventory Method: Service Lines, Discard Patterns and Depreciation Methods* (Voorburg, Statistics Netherlands, 1998)

Meredith, D., "The British Government and Colonial Economic Policy, 1919–1939", *The Economic History Review, New Series,* Vol.28, No.3, (1975) pp.484-499

Meteorological service of Cyprus, *Το κλίμα της Κύπρου* [The Climate of Cyprus], http://www.moa.gov.cy/moa/ms/ms.nsf/dmlcyclimate_gr/dmlcyclimate_gr?opendocument&print as consulted 23 Jan 2008.

Metwally, M.M., *Structure and Performance of the Maltese Economy*, (Malta: Aquilina & Co, 1977)

Munting, R. & Holderness B. A., *Crisis, Recovery and War: an Economic History of Continental Europe 1918–1945*, (Hemel Hempstead: Philip Allan, 1991)

Nicolson, J.L., "National Income at Factor Cost or Market Prices" *The Economic Journal*, Vol.65, No.258 (1955), pp.216-224

North, D.C., *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990)

Oakden, R., *Report on the Finances and Economic Resources of Cyprus*, (London: Crown Agents for the Colonies, 1935)

OECD, *Measuring Productivity: Measurement of Aggregate and Industry Level Productivity Growth* (Paris: OECD, 2001)

Pamuk, S., "Estimating Economic Growth in the Middle East, 1820–1950", *The Journal of Economic History*, Vol.66, No.3, (2006) pp.809-828

Pamuk, S. & Williamson, J.G., *The Mediterranean Response to Globalisation before 1950*, (London: Routledge, 2000)

Pan-Cyprian Co-operative Confederation, *Συνεργατισμός 1909-2006: Συνοπτική Θεώρηση* [Co-operativism, 1909-2006: Historical Summary] (Nicosia, Hermes Media Press, 2006)

Pan-Cyprian Labour Federation, *Μεταλλωρύχων Μνήμες* [Miner's Memories], DVD, Nicosia, 2007

Phylaktis, K. *The Banking System of Cyprus: Past, Present and Future,* (London: Macmillan, 1995)

Prados De La Escosura, L.,"Spain's Gross Domestic Product, 1850–1990: A new Series", *Documentos De Trabajo, Ministerio de Economia y Hacienda,* (1993)

Prados De La Escosura, L., "International Comparisons of Real Product, 1820–1990: An Alternative Data Set", *Explorations in Economic History*, No.37, (2000) pp.1-41

Prados De La Escosura, L., *El Progreso Económico De España, (1850-2000),* (Madrid: BBVA, 2002)

Pratt, L.R., *East of Malta, West of Suez: Britain's Mediterranean Crisis 1936–1939,* (Cambridge: Cambridge University Press, 1975)

Republic of Cyprus, *Report on marketing of Vine products* (Nicosia: GPO, 1956)

Republic of Cyprus, *Methodology of National Accounts 1958–1963,* (Nicosia: Statistics and Research Department, 1964)

Republic of Cyprus, *Indexes to the Cyprus Industrial Classification of all Economic Activities*, (Nicosia: Statistics and Research Department, 1969)

Republic of Cyprus, *The Economic Consequences of the Turkish Invasion and the Future Prospects of the Cyprus Economy* (Nicosia: GPO, 1975)

Republic of Cyprus, *History and Analysis of the Methodology of National Accounts in Cyprus*, (Nicosia: Statistics and Research Department, 1977)

Richards, K.L., *Report of the Livestock Officer for 1949* (Cyprus: Department of Agriculture, 1950)

Robinson, E.A.G., (ed.), *Economic Consequences of the Size of Nations: Proceeding of a Conference held by the International Economic Association*, (London: Macmillan, 1960)

Rodgers, M. *Handbook of Key Economic Indicators* (USA: McGraw Hill, 1998)

Rogiros, M. *Recent trends of agricultural production and productivity in Cyprus* (Nicosia: Ministry of agriculture and natural resources, 1970)

Rothermund. D., *The Global impact of the great depression 1929-1933* (New York: Routledge, 1996)

Schulze, M., "Re-estimating Austrian GDP, 1870–1913: Methods and Sources" *Working Paper London School of Economics, Department of Economic History*, No.36, (1997)

Schulze, M. (ed.), *Western Europe: Economic and Social Change since 1945*, (Harlow: Pearson Education Limited, 1999)

Schulze, M., "Patterns of Growth and stagnation in the late 19th century Habsburg economy", *European Review of Economic History,* No.4, (2000) pp.311-340

Schulze, M., "An Estimate of Imperial Austria's Gross Domestic Fixed Capital Stock 1870-1913: Methods, Sources and Results", *Working Paper London School of Economics, Department of Economic History,* No.92, (2005)

Schulze, M., 'The Growth and Composition of Imperial Austria's Fixed Capital Stock: New Annual Time Series for 1870-1913', Économies et Sociétés, Série 'Histoire Economique Quantitative' AF, no. 39, (2008), pp. 1597-1614

Schulze, M., "Origins of Catch-up failure: Comparative Productivity Growth in the Hapsburg Empire 1870–1910", *European Review of Economic History*, (2007) vol.II, pp.189-210

Smits, J.P., Horlings. E., Van Zanden., J.L., *Dutch GDP and its components, 1800-1913* (Groningen: Groningen growth and development centre, 2000)

Smits, J.P., "Measuring the Wealth and Poverty of Nations: Methodological Problems and Possible Solutions", *IEHC Helsinki*, Session 103: New Experiences with Historical National Accounts, (2006)

Statistical Service of Cyprus, *Description of the Sources and Methods Used to Compile Non-Financial National Accounts*, (Nicosia: Statistical Service of Cyprus, 2000)

St. John-Jones, L.W., *The population of Cyprus: Demographic Trends and Socio-economic Influences* (London: ICS, 1983)

Storrs, R., *Orientations* (London: Ivor Nicholson and Watson, 1945)

Summers, R. & Heston A., "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950–1988", *The Quarterly Journal of Economics*, Vol.106, No.2, (1991) pp.32-368

Surridge, B.J., *A Survey of Rural Life in Cyprus,* (Nicosia: GPO, 1930)

Taeuber, I.B., "Cyprus: The Demography of a Strategic Island", *Population Index*, Vol.21, No.1 (1955), pp.4-20

Thorp, W. L., *Cyprus: Suggestions for a Development Programme* (New York: United Nations, 1961)

Tortella, G., Consiglio, J. & Martinez Oliva, J.C. (eds.) *Banking in the Mediterranean: A Historical Perspective* (Ashgate Publishing, 2010)

Troup, R.S., Cyprus: *Summary of the Recommendations Contained in a Report on Forestry* (Nicosia: GPO, 1930)

United Nations, Economic and Social Affairs, *Handbook of National Accounting, Series F, No.85: National Accounts: A Practical Introduction,* (New York: United Nations, 2003)

United Nations, Department of international economic and social affairs, *Handbook of National Accounting, Series F, No.39: Accounting for Production: Sources and Methods,* (New York: United Nations, 1986)

Unwin, A. H., *Decennial Report of the Forest Administration in Cyprus for the Years 1921-1930*, (Nicosia: Kosmos & Th. Kyriakides, 1931)

Valerio, N., "Some Remarks about Growth and Stagnation in the Mediterranean World in the XIXth and XXth Centuries", *The Journal of European Economic History,* Vol.21, No.1 (1992) pp.121–134

Vanoli, A., *A History of National Accounting*, (Amsterdam: IOS press, 2005)

Van Ark, B., "Towards European National Accounts" *Scandinavian Economic History Review*, Vol.XLIII No.1, (1995) pp.3 – 16

Van Zanden, J.L., "The First Green Revolution: The Growth of Production and Productivity in European Agriculture 1870 – 1914", *The Economic History Review*, Vol.44, No.2, (1991) pp.215-239

Varchris, M.A, & Thomas, J., "International price comparisons based on purchasing power parity" *Monthly Labour Review*, Volume 122, (October 1999), pp.3-12

Vassallo, C., *The Malta Chamber of Commerce 1848–1979: An Outline History of Maltese Trade* (Marsa: Malta Chamber of Commerce, 1998)

Vassiliou, S., *Input–Output Analysis of the Economy of Cyprus* (Cambridge, Ma: Harvard University, 1959)

Waterer, R.R., *Cyprus: Empire Forests during the War 1939–1945*, (Nicosia: GPO, 1946)

Waterer, R.R., *Cyprus: Report of the Forest Administration for the Years 1939–1945* (Nicosia: GPO, 1948)

Weston, B.J., *Annual Rural Development Report for 1938* (Nicosia: GPO, 1939)

Wilmington. M. W., *The Middle East Supply Centre* (Albany: State University of New York press, 1971)

Wilson, R. *Cyprus and the International Economy*, (New York: St. Martin's Press, 1992)

World Bank, "What Makes Small States different?" http://wbln0018.worldbank.org/html/smallstates.nsf as consulted 12 Dec 2007.

World Trade Organisation, "Information-World Merchandise Trade 1921-38" http://www.wto.org/gatt_docs/English/SULPDF/91320046.pdf as consulted 21 Dec 2009

Yates, J., "Imputed Rent and Income Distribution", *Review of Income and Wealth* Vol.40, No.1, (1994) pp.43-66, p.44

Yiassemides, P. & Kunert, H., *Aspects of the Agricultural Economy of Cyprus 1950–1965*, (Nicosia: Ministry of Agriculture and Natural Resources, 1967)

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Economic Growth or Continuing Stagnation? Estimating the GDP of Cyprus and Malta, 1921-1938

Appendix

PhD in Economic History

Alexander Apostolides

23/03/2010

Contents

Figures, Tables and Maps

Appendix A: Conversions of Maltese and Cypriot Units of Measurement

Table A.1: Currency Conversions

	Unit	Equals	Unit	Source
1	Cyprus Shilling	9	Copper Piastre	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Cyprus Pound	180	Copper Piastre	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Cyprus Pound	1	Pound Sterling	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)

Table A.2: Volume Conversions

	Unit	Equals	Unit	Source
1	Kile (Wheat)	1	Bushel	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kile (Wheat)	21	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kile (Barley)	16	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kile (Oats)	13	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kile (Vetches)	24	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Bushel Maize / Sorghum	56	Pounds (Lbs)	South African Grain Information Service, *Conversion Appendix*, http://www.sagis.org.za/ . University of Missouri, Extension. Tables for Weights and Measurement: Crops http://extension.missouri.edu/publications/DisplayPub.aspx?P=G4020
1	Quart	2	Pints	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Cyprus Litre	2.8	Quarts	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Gallon	4	Quarts	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Kile (Liquid)	8	Gallon	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Kouza (Liquid)	9	Quarts	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Load (Liquid)	16	Kouzas	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109
1	Sacchi	2	Bushel	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Sacchi	4	Tumoli	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Salme	4	Sacchi	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Salme	1	Quarter	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quarter	8	Bushel	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Litre	0.8799016	Cartucci (Liquid)	Own Calculations
1	Litre	1.7598	Pint	Own Calculations
1	Pinte	1	Gills	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Pint	16.667	Gills	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)

1	Terezi	2	Pinte	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Terezi	0.5	Pint	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Mezzi	1	Pint	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quarte (plural Quartucci)	1	Quart	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quatre / Ottav	4.75	Quartucci	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quatare	9.5	Quartucci	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Barile (Plural Barrili)	38	Quartucci	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Barile	1	Firkins	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Pipe	11	Barrili	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Botti	22	Barrili	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Botti	209	Gallon	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Barile	9.5	Gallons	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quart	2	Pint	Own Calculations
1	Litre	1.7636995	Pints	Own Calculations
1	Barile	40.8233	Litre	Own Calculations
1	Botti	948.00728	Litre	Own Calculations

Table A.3: Weight Conversions

	Unit	Equals	Unit	Source
1	Oke (Plural Okes)	2.8	Pounds (lbs)	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Pound (lbs)	0.4535924	Kilograms	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Oke	1.2700586	Kilograms	Own Calculations
1	Metic Ton	2204.623	Pounds (lbs)	Own Calculations
1	Hundredweight (Cwt)	40	Oke	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Hundredweight (Cwt)	112	Pounds (lbs)	Imperial Standard Measurements
1	Hundredweight (Cwt)	50.802345	Kilograms	Own Calculations
1	Long ton (U.K)	800	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Long ton (U.K)	1016.047	Kilogram	Own Calculations
1	Long ton (U.K)	20	Cwt	Imperial Standard Measurements
1	Long ton (U.K)	2240	Pounds (lbs)	Imperial Standard Measurements
1	Oke	0.785	Kilograms	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kantar	180	Okes	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Kantar	504	Pound (lbs)	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Long ton (U.K)	4.5	Kantar	Percival, D.A., *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)
1	Oke	400	Drams	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal*, Vol.XXXV, Part.3, (1939) pp.87-109

1	Cyprus Litre	1.8	Okes	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXV, Part.3, (1939) pp.87-109
1	Kantar	44	Okes	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXV, Part.3, (1939) pp.87-109
1	Aleppo Kantar	180	Okes	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXV, Part.3, (1939) pp.87-109
1	Camel load (straw)	100	Okes (approximately)	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXV, Part.3, (1939) pp.87-109
1	Cart of manure	50	Okes (approximately)	James, H.H. & Koumides C.C., "An Analysis of Farming Costs in Cyprus" *The Cyprus Agricultural Journal,* Vol.XXXV, Part.3, (1939) pp.87-109
1	Ottavi	1.8666667	Drams	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quatre	2	Ottavi	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quatre	3.7333333	Drams	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Once	4	Quattre	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Once	14.933333	Drams	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Rotoli	30	Once	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Rotoli	1.75	Pound (lbs)	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Rotoli	0.7937866	Kilogram	Own Calculations
1	Pese	5	Rotoli	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Hundredweight (Cwt)	64	Rotoli	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Quantar	100	Rotoli	English National Archives, Kew, London, CO161/125, "Annual Report of the Office of Agricuture, 1938"
1	Quantar	175	Pound (lbs)	English National Archives, Kew, London, CO161/125, "Annual Report of the Office of Agricuture, 1938"
1	Pese	8.75	Pound (lbs)	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Cantari	20	Pese	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Cantari	175	Pound (lbs)	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Pesate	3	Cantari	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Pesate	525	Pound (lbs)	Malta, *Statistical (Blue) Books*, (Valletta: GPO, 1938)
1	Salma	64	Gallon	English National Archives, Kew, London, CO161/125, "Annual Report of the Office of Agricuture, 1938"
1	Salma	16	Tumoli	English National Archives, Kew, London, CO161/125, "Annual Report of the Office of Agricuture, 1938"
1	Soma	10	Bundles	English National Archives, Kew, London, CO161/125, "Annual Report of the Office of Agricuture, 1938"

Appendix B: Cypriot GDP at factor cost, 1921-1938

Notes on the Cypriot GDP:

The value added is categorised on the basis of the NACE rev.2 nomenclature of the European Union[1]. The European Union nomenclature divides output into broad economic sectors, labelled A to U. For example, agriculture, forestry and fishing are summed as economic sector A. These sectors are in bold in the general table, while a summary table is provided below. The breakdown of GDP beaks up these sectors in industrial divisions identified by digit codes: thus agriculture is 1, forestry 2, and so on. The value added of these industrial divisions is shaded and in italics. These are broken down into industrial groups and classes, indentified by three or four digits: for example, growing of cereals is 1.11, and of vegetables 1.13. Some industrial sections/divisions/groups and classes were added together if the industries were involved in similar production and a greater disaggregation was not possible. Where it was not possible to estimate a product, or where the NACE category was not applicable for Cyprus, the category was removed. These non-estimated sectors were just a small part of GDP. The handicraft sector was estimated separately from the manufacturing sector, and is given below the formal manufacturing sector in a different shaded font, thus allowing for a duplication of some categories. Thus the total production of industry is divided in formal manufacturing and handicraft. If one is interested, for example, in evaluating total textile production one can add the digits 13, 14, 15 of both the manufacturing and the handicraft sectors. All output estimates are given here in constant 1938 Cyprus pounds; due to the differing purchasing power parity of Malta and Cyprus the results presented here in Cyprus pounds do not match the tables in the thesis since, as explained in Chapter 3; an adjustment factor to Maltese prices was necessary. The constant 1938 Cyprus pounds were converted in Maltese pound sterling of 1938 by the Purchasing Power Parity (PPP) as estimated in chapter 3. In order to convert the values in Appendix B to constant 1938 Maltese pound sterling, multiply the values presented below by 178% (3 significant figures).

[1] For more information see: Eurostat, *NACE Rev.2: Statistical Classification of Economic Activity*, (Luxembourg: Eurostat, 2008)

Table A.4: Summary of Cypriot GDP, 1921-1938, in constant 1938 Cyprus Pounds.

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Section A	Agriculture, Forestry and Fishing	1207017	1393514	1513823	1397984	1457649	1403025	1536600	1403240	1621980	1609600	1428404	1294505	1192905	1444947	1689899	1434049	1540654	1601156
Section B	Mining and Quarrying	54315	76642	97366	186530	203972	216459	308242	335900	401457	260549	209932	169665	231024	244777	426937	554036	910591	1131233
Section Ca) + Cb)	Manufacturing and Handicrafts	912544	932951	923883	763999	908844	734152	883172	832358	1009030	879881	869798	807977	891367	956607	931973	853701	1118536	1059509
Section D & E	Electricity, Gas, Steam, Water Supply, Sewerage, Waste Management (Utilities)	36161	36092	35573	36506	37268	36464	37977	37682	39190	36304	34915	33809	33759	35185	35947	35951	38649	38007
Section F	Construction	94494	90323	81860	88097	103312	179587	185203	211603	171234	184520	171645	121392	148356	192265	259626	336648	444425	534294
Section G	Wholesale and retail trade; repair of motor vehicles and motorcycles	395032	392704	372368	410122	441087	409436	470466	459217	520091	405253	350358	307114	306221	364433	396198	397742	507151	483060
Section H	Transportation and Storage	299800	297337	282367	308168	330622	309544	353368	346324	392008	313165	274994	245779	246300	288254	313198	316123	397884	385029
Section I	Accommodation and Food Service Activities	128902	131455	134065	136732	139459	142245	145091	147999	150969	154004	157102	162417	167912	173592	179465	185536	191813	198302
Section J	Information and Communication	11856	16541	14409	11128	11906	13431	7137	6936	8462	9315	8186	7656	7383	7763	8542	8409	10169	11316
Section K	Financial and Insurance Activities	6311	10002	9300	13306	12049	13036	15593	20381	31944	53660	52103	46439	30184	67084	57918	82247	72880	75662
Section L	Real Estate Activities	102455	102833	103224	103626	104042	104471	105249	106042	106850	107672	108511	115851	123261	130743	138301	145937	154073	162293
Section M	Professional, Scientific and Technical Activities	55681	59171	61614	62356	63812	64666	66753	55056	57129	59611	61897	62167	62599	62966	63248	63345	63661	64140
Section O	Public Administration and Defence / Social Security	134565	158964	174075	176970	178757	176699	179237	206937	248757	287500	293165	249486	296249	286110	306789	305785	246872	259692
Section P	Education	102199	107712	113249	118843	124733	131111	137765	144767	152422	253288	269168	269219	170802	170978	171338	172135	173277	174223
Section Q	Human Health and Social Work	55967	54336	60676	60577	62594	63637	65953	68619	74604	80647	83199	85243	86261	88605	92395	94152	98668	103398
Section R	Arts, Entertainment and Recreation	23436	23819	24232	24678	25158	25674	26230	26826	27466	28153	28890	28963	29071	29357	30679	31441	32680	33371
Section S	Other Service Activities	43265	45435	47773	50292	53008	55938	59102	62521	66218	70218	74552	75990	77530	79181	80953	82858	84906	87112
Section T	Activities of Households as Employers; Undifferentiated goods and Services-Producing Activities of Households For Own Use	68545	72022	75834	80038	84702	89909	95759	102372	109895	118505	128415	129726	131254	133013	135016	137281	139823	142662
Total Value Added	*GDP at Factor Prices*	*3732544*	*4001854*	*4125691*	*4029952*	*4342975*	*4169484*	*4678897*	*4574781*	*5189706*	*4911844*	*4605234*	*4213399*	*4232438*	*4755859*	*5318422*	*5237377*	*6226713*	*6544460*

Table A.5: Breakdown of Cypriot GDP, 1921-1938, in constant 1938 Cyprus Pounds.

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
1.11	Growing of cereals (except rice), leguminous crops and oil seeds	349601	355650	381761	279054	310728	277718	309123	265343	386887	335369	251225	169624	240281	328920	382041	303851	345376	316719
1.13	Growing of vegetables and melons, roots and tubers	70221	54383	49482	55741	43370	73599	66038	63482	108493	87870	87234	73360	63922	73541	86730	89378	109775	88300
1.15	Growing of tobacco	154	538	372	221	204	1785	4447	5286	9078	3250	1354	2514	5144	17974	6651	3397	842	402
1.16	Growing of fibre crops	21148	30305	27509	41029	39771	53758	26659	27024	44134	58489	36158	14194	14056	25228	57637	34597	52232	25558
1.19	Growing of other non-perennial crops	45990	44851	49839	38157	42810	37375	48080	41580	48935	50458	42696	27175	33874	47584	54067	40916	50182	43084
1.21	Growing of grapes	47568	120760	154626	121819	183036	127065	129611	132158	134704	137250	104335	186313	132580	146815	182587	152143	88499	190412
1.23	Growing of citrus fruits	38070	39391	40759	42173	43637	45152	46719	48340	50018	51754	53550	55346	57203	59122	61105	63154	65273	67462
1.24	Growing of pome fruits and stone fruits, nuts (1.25)	7951	9915	7735	8204	6876	7518	8321	9227	9820	10457	10845	11321	12190	13475	14693	16146	17818	19243
1.26	Growing of oleaginous fruits	12151	15217	37942	118389	27624	39463	146013	15785	69169	10015	93407	8232	11441	48650	59237	16500	107723	52294
1.28	Growing of spices, aromatic, drug and pharmaceutical crops	24645	14642	20341	17309	24528	28569	28475	14149	21576	30672	21933	6899	7992	35737	42580	17154	21353	18958
1.29	Growing of other perennial crops	150422	150314	50570	98466	98419	100692	83588	130304	114146	215773	136737	75329	44613	53974	68716	64995	119204	80081
1.41	Raising of dairy cattle, buffaloes (1.42)	75416	53679	65393	54000	43626	54408	62169	78240	69833	70346	51741	49980	45440	42653	56297	56433	55674	62944
1.43	Raising of horses and other equines, camelids (1.43), sheep and goats (1.45), swine, pigs (1.46)	221534	247960	316240	239472	242143	268797	277682	359443	309643	305472	335428	329784	309793	303975	328215	324734	341966	334917
1.5	Ancillary activities on farms, distilling, rectifying and blending of spirits, manufacture of wine from grapes (11.02), manufacture of cider and other fruit wines (11.03),	138306	248523	294316	268779	341410	281147	290328	204625	236480	235475	194665	276134	204363	232970	276688	236549	149746	285590
Sub-Total 1	*Agriculture*	1203179	1386129	1496886	1382813	1448184	1397046	1527254	1394986	1612916	1602647	1421307	1286206	1182893	1430616	1677244	1419948	1525663	1585965
2.2	Logging / gathering of wild growing non-wood products (2.3), sawmilling and planing of wood (16.1)	2290	2488	4967	3957	6754	3174	2452	3878	4069	3487	3308	4139	5615	6669	6476	8378	9713	10040
Sub-Total 2	*Forestry*	*2290*	*2488*	*4967*	*3957*	*6754*	*3174*	*2452*	*3878*	*4069*	*3487*	*3308*	*4139*	*5615*	*6669*	*6476*	*8378*	*9713*	*10040*
3.11	Marine fishing, Sponge fishing	1548	4897	11969	11214	2712	2806	6894	4376	4995	3466	3789	4161	4398	7662	6180	5723	5278	5151
Sub-Total 3	*Fishing*	*1548*	*4897*	*11969*	*11214*	*2712*	*2806*	*6894*	*4376*	*4995*	*3466*	*3789*	*4161*	*4398*	*7662*	*6180*	*5723*	*5278*	*5151*
Section A	**Agriculture, Forestry and Fishing**	**1207017**	**1393514**	**1513823**	**1397984**	**1457649**	**1403025**	**1536600**	**1403240**	**1621980**	**1609600**	**1428404**	**1294505**	**1192905**	**1444947**	**1689899**	**1434049**	**1540654**	**1601156**
7.29	Mining of other non-ferrous metal ores (chrome, cuprous pyrite, copper precipitate and residues, manganese, Gold, yellow ore)	8192	20706	43652	103878	126707	107756	149242	170277	208247	169162	141683	125966	148900	128021	306505	415391	741541	1040323
Sub-Total 5/6/7	*Metal Ore Mining*	*8192*	*20706*	*43652*	*103878*	*126707*	*107756*	*149242*	*170277*	*208247*	*169162*	*141683*	*125966*	*148900*	*128021*	*306505*	*415391*	*741541*	*1040323*

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
8.11	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate, asbestos	13677	31864	27423	56927	49251	81918	131735	137967	163910	66494	45990	22716	57782	91715	92042	113520	137922	66732
8.12	Operation of gravel and sand pits; mining of clays and kaolin	0	0	0	113	101	92	97	77	73	71	103	106	57	106	55	48	56	47
9	Extraction of salt	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788	15788
8.99	Other mining and quarrying n.e.c.	16658	8284	10503	9824	12125	10905	11381	11790	13439	9033	6368	5089	8498	9148	12548	9290	15284	8344
Sub-Total 8	*Quarrying and other mining*	*46122*	*55936*	*53714*	*82652*	*77265*	*108703*	*159000*	*165623*	*193210*	*91386*	*68249*	*43699*	*82125*	*116756*	*120433*	*138645*	*169050*	*90911*
Section B	**Mining and Quarrying**	**54315**	**76642**	**97366**	**186530**	**203972**	**216459**	**308242**	**335900**	**401457**	**260549**	**209932**	**169665**	**231024**	**244777**	**426937**	**554036**	**910591**	**1131233**
10.39	Other processing and preserving of fruit and vegetables, Manufacture of fruit and vegetable juice (10.32)	0	0	0	0	0	0	103	131	348	298	233	370	353	369	391	389	397	409
10.41	Manufacture of oils, fats, margarine and similar edible fats (10.42)	3424	3499	3464	2863	3409	2753	3314	3124	3787	3298	3260	3030	3346	3630	3506	1568	2678	3975
10.52	Manufacture of ice cream	206	120	127	120	117	126	157	197	132	384	519	338	452	561	939	1220	1191	1683
10.61	Manufacture of grain mill products (including carob and sumac crushing)	143814	150450	154565	110283	126093	88795	113528	95374	134528	114560	106517	81336	100270	134674	149407	129150	173783	158750
10.71	Manufacture of bread	176310	184688	186047	161293	189293	146410	184305	180986	220947	175603	201147	204760	229065	233662	192706	171172	244736	223392
10.73	Manufacture of macaroni, noodles, couscous and similar farinaceous products	0	0	0	0	0	0	1377	1742	2135	2168	1958	1630	1734	1962	2428	2537	2132	2645
10.82	Manufacture of cocoa, chocolate and sugar confectionery	775	792	784	648	772	623	750	707	858	747	738	686	758	822	794	720	953	900
11.04	Manufacture of other non-distilled fermented beverages, beer (11.05), of malt (11.06), soft drinks, mineral waters and other bottled waters (11.07)	542	559	924	880	1474	1600	1272	1241	1257	1153	1449	1410	1499	1611	2062	2264	2533	2926
Sub-Total 10/11	*Food and Drinks Processing*	*325072*	*340108*	*345911*	*276088*	*321157*	*240307*	*304805*	*283504*	*363992*	*298211*	*315821*	*293558*	*337477*	*377291*	*352233*	*309020*	*428404*	*394679*
12	Manufacture of tobacco products	46196	50957	40190	44537	44969	39147	42355	40138	37499	35864	33595	30695	30134	30889	32381	34171	35972	40196
Sub-Total 12	*Tobacco Manufacturing*	*46196*	*50957*	*40190*	*44537*	*44969*	*39147*	*42355*	*40138*	*37499*	*35864*	*33595*	*30695*	*30134*	*30889*	*32381*	*34171*	*35972*	*40196*
13.1	Preparation and spinning of textile fibres, Weaving of textiles (13.2)	52578	48431	48052	35036	56430	60478	58860	55067	57602	66356	44069	41953	38348	34696	37152	33292	40907	38284
13.94	Manufacture of cordage, rope, twine and netting	444	444	444	444	444	444	444	444	444	444	648	432	448	145	545	611	978	1083

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
15.11	Tanning and dressing of leather, dressing and dyeing of fur, Manufacture of leather clothes (14.11), Manufacture of luggage, handbags and, saddlery and harness (15.12)	5632	584	1816	2205	1427	1149	3234	5511	6281	2984	3043	2424	2238	1231	1977	2005	2378	4763
Sub-Total 13/14/15	*Preparation of Textiles, Clothes and Footwear*	*58654*	*49459*	*50312*	*37685*	*58301*	*62070*	*62537*	*61022*	*64326*	*69784*	*47761*	*44809*	*41034*	*36072*	*39674*	*35908*	*44263*	*44130*
18.11	Printing of newspapers, Other printing (18.12), Binding and related services (18.14)	2328	2803	3064	2868	2713	2314	2305	2407	3015	3502	3626	3061	2457	2534	3009	2996	3053	2905
Sub-Total 17/18	*Paper and Printing Works*	*2328*	*2803*	*3064*	*2868*	*2713*	*2314*	*2305*	*2407*	*3015*	*3502*	*3626*	*3061*	*2457*	*2534*	*3009*	*2996*	*3053*	*2905*
20.41	Manufacture of soap and detergents, cleaning and polishing preparations	189	41	101	62	413	516	2593	2284	3235	4258	4927	4214	4129	5582	7911	8447	8230	8079
20.53	Manufacture of essential oils	278	95	204	67	144	100	109	70	107	71	102	59	86	78	7	214	171	202
21.1	Manufacture of basic pharmaceutical products, pharmaceutical preparations (21.2)	212	217	214	177	211	170	205	193	234	204	202	187	207	225	217	197	220	246
Sub-Total 19/20/21	*Chemical Industry*	*679*	*353*	*520*	*306*	*768*	*786*	*2908*	*2547*	*3576*	*4533*	*5230*	*4460*	*4422*	*5884*	*8134*	*8858*	*8621*	*8527*
23.32	Manufacture of bricks, tiles and construction products in baked clay, tiles and flags (23.31), refractory products (23.2)	2241	1005	1348	2841	4726	5194	5376	5878	7442	7371	8016	8299	8764	7874	9451	10247	11418	12692
23.41	Manufacture of ceramic household and ornamental articles, other ceramic products (23.49)	453	877	668	692	942	806	1171	1287	1485	1246	1239	897	809	759	1002	908	844	1192
23.52	Manufacture of lime and plaster	1430	1455	827	1364	1892	1205	1544	1742	1783	1353	1840	1491	1654	1325	1349	2708	2838	3223
23.61	Manufacture of concrete products for construction purposes; other articles of concrete, plaster and cement (23.69)	2608	2665	2638	2181	2596	2097	2524	2379	2884	2512	2482	2307	2548	2764	2670	2422	1860	3027
Sub-Total 22/23	*Manufacture of Construction Materials*	*6731*	*6002*	*5481*	*7077*	*10155*	*9302*	*10614*	*11285*	*13594*	*12483*	*13578*	*12994*	*13775*	*12723*	*14472*	*16286*	*16959*	*20134*
24.51	Casting of iron, steel (24.52), light metals (24.53)	3380	3454	3420	2827	3365	2718	3271	3084	3739	3256	3218	2991	3303	3584	3461	3140	4157	3924
Sub-Total 24/25	*Iron Founding and Metal Manufacture*	*3380*	*3454*	*3420*	*2827*	*3365*	*2718*	*3271*	*3084*	*3739*	*3256*	*3218*	*2991*	*3303*	*3584*	*3461*	*3140*	*4157*	*3924*
30.11	Building of ships and floating structures, pleasure and sporting boats (30.12)	0	28	12	7	19	13	11	3	7	8	2	4	8	21	25	63	0	0
32.5	Manufacture of medical and dental instruments and supplies	13641	13940	13800	11407	13580	10968	13201	12446	15087	13140	12986	12069	13329	4340	11873	19762	16595	15835

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
32.91	Manufacture of brooms and brushes	575	588	582	481	573	463	557	525	636	554	548	509	562	610	589	535	657	668
32.99	Other manufacturing n.e.c.	5825	5953	5893	4871	5799	4684	5637	5315	6443	5611	5546	5154	5692	6175	5964	5412	7134	6762
Sub-Total 26/27/28/29/30/31/32	*General Manufacturing*	*20042*	*20509*	*20287*	*16766*	*19971*	*16127*	*19407*	*18289*	*22173*	*19313*	*19082*	*17737*	*19591*	*11146*	*18452*	*25771*	*24386*	*23265*
Section C a)	Manufacturing(Formal)	463081	473646	469185	388154	461398	372772	448202	422276	511915	446945	441911	410303	452194	480123	471815	436151	565814	537760
10.11	Processing and preserving and creation of products of meat (10.13), poultry (10.14), fish, crustaceans and molluscs (10.2)	109	111	110	91	109	88	106	100	121	105	104	97	107	116	112	101	134	127
10.82	Manufacture of cocoa, chocolate and sugar confectionery	6897	7048	6977	5767	6866	5545	6675	6293	7628	6643	6566	6102	6739	7312	7061	6407	8482	8006
Sub-Total 10/11	*Food and Drinks Processing*	*7006*	*7160*	*7088*	*5859*	*6975*	*5633*	*6780*	*6392*	*7749*	*6749*	*6670*	*6199*	*6846*	*7427*	*7173*	*6509*	*8616*	*8133*
13.91	Manufacture of knitted and crocheted fabrics, made-up textile articles, except apparel (13.91), carpets and rugs(13.93)	50238	51338	50823	42010	50013	40393	48618	45836	55564	48391	47826	44449	49088	53258	51433	46671	61780	58318
13.94	Manufacture of cordage, rope, twine and netting	29	29	29	24	29	23	28	26	32	28	27	25	28	30	29	27	35	33
14	Manufacture of wearing apparel	124485	127211	125935	104095	123926	100089	120471	113578	137683	119907	118509	110141	121635	131969	127447	115646	153084	144505
14.12	Manufacture of workwear, outerwear(14.13), underwear (14.14), knitted and crocheted hosiery (14.31), other knitted and crocheted apparel (14.39)	2679	2737	2710	2240	2667	2154	2592	2444	2963	2580	2550	2370	2617	2840	2742	2488	3294	3109
14.19	Manufacture of other wearing apparel and accessories	2149	2196	2174	1797	2140	1728	2080	1961	2377	2070	2046	1902	2100	2278	2200	1997	2643	2495
15.11	Tanning and dressing of leather; dressing and dyeing of fur, manufacture of leather clothes (14.11), luggage, handbags and the like, saddlery and harness (15.12)	7383	7545	7469	6174	7350	5936	7145	6736	8166	7112	7029	6532	7214	7827	7559	6859	9079	8571
15.2	Manufacture of footwear	87485	89400	88504	73155	87092	70340	84664	79819	96760	84268	83285	77404	85482	92744	89566	81273	107583	101554
Sub-Total 13/14/15	*Preparation of Textiles, Clothes and Footwear*	*274447*	*280457*	*277644*	*229495*	*273215*	*220663*	*265598*	*250401*	*303544*	*264355*	*261273*	*242824*	*268164*	*290947*	*280977*	*254961*	*337498*	*318586*
16.24	Manufacture of wooden containers	682	697	690	570	679	548	660	622	754	657	649	603	666	723	698	633	839	792
16.29	Manufacture of other products of wood, articles of cork, straw and plaiting materials	104837	107133	106059	87666	104367	84292	101457	95652	115952	100982	99805	92757	102437	111140	107332	97394	128923	121698
Sub-Total 16	*Wood Processing*	*105519*	*107830*	*106748*	*88236*	*105046*	*84840*	*102117*	*96274*	*116706*	*101639*	*100454*	*93361*	*103104*	*111863*	*108030*	*98027*	*129761*	*122490*
17.29	Manufacture of other articles of paper and	46	47	46	38	46	37	44	42	51	44	44	41	45	49	47	43	56	53

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
	paperboard																		
Sub-Total 17/18	*Paper and Printing Works*	*46*	*47*	*46*	*38*	*46*	*37*	*44*	*42*	*51*	*44*	*44*	*41*	*45*	*49*	*47*	*43*	*56*	*53*
23.52	Manufacture of lime and plaster (gypsum)	2809	2871	2842	2349	2797	2259	2719	2563	3107	2706	2674	2486	2745	2978	2876	2610	3455	3261
Sub-Total 22/23	*Manufacture of Construction Materials*	*2809*	*2871*	*2842*	*2349*	*2797*	*2259*	*2719*	*2563*	*3107*	*2706*	*2674*	*2486*	*2745*	*2978*	*2876*	*2610*	*3455*	*3261*
24.51	Casting of iron, casting of steel (24.52), casting of light metals (24.53)	19877	20312	20109	16621	19788	15982	19236	18135	21984	19146	18923	17587	19422	21072	20350	18466	24444	23074
25.4	Manufacture of weapons and ammunition	1142	1167	1155	955	1137	918	1105	1042	1263	1100	1087	1010	1116	1210	1169	1061	1404	1325
25.5	Forging, pressing, stamping and roll-forming of metal, powder metallurgy, treatment and coating of metals (25.61), machining (25.62)	5247	5362	5308	4388	5224	4219	5078	4787	5803	5054	4995	4643	5127	5563	5372	4875	6453	6091
25.71	Manufacture of cutlery	579	592	586	484	577	466	561	529	641	558	552	513	566	614	593	538	712	673
25.73	Manufacture of tools	13905	14209	14067	11627	13842	11180	13456	12686	15379	13393	13237	12303	13586	14741	14236	12917	17099	16141
Sub-Total 24/25	*Iron Founding and Metal Manufacture*	*40750*	*41642*	*41225*	*34076*	*40567*	*32764*	*39436*	*37180*	*45070*	*39252*	*38794*	*36055*	*39817*	*43200*	*41720*	*37857*	*50112*	*47304*
28.3	Manufacture of agricultural and forestry machinery	83	85	84	69	82	67	80	76	92	80	79	73	81	88	85	77	102	96
30.99	Manufacture of other transport equipment n.e.c.	5113	5225	5172	4275	5090	4111	4948	4665	5655	4925	4867	4524	4996	5420	5234	4750	6287	5935
31.03	Manufacture of mattresses	4223	4315	4272	3531	4204	3395	4086	3853	4670	4067	4020	3736	4126	4476	4323	3923	5193	4902
31.09	Manufacture of other furniture	8146	8324	8241	6812	8109	6549	7883	7432	9009	7846	7755	7207	7959	8636	8340	7567	10017	9456
32.2	Manufacture of musical instruments	44	45	44	36	43	35	42	40	48	42	41	39	43	46	45	40	54	51
32.91	Manufacture of brooms and brushes	233	238	236	195	232	188	226	213	258	225	222	206	228	247	239	217	287	271
32.99	Other manufacturing n.e.c.	1045	1067	1057	874	1040	840	1011	953	1155	1006	994	924	1021	1107	1069	970	1285	1213
Sub-Total 26/27/28/29/30/31/32	*General Manufacturing*	*18885*	*19299*	*19105*	*15792*	*18801*	*15184*	*18276*	*17231*	*20888*	*18191*	*17979*	*16709*	*18453*	*20021*	*19335*	*17544*	*23224*	*21923*
Section C b)	**Handicrafts**	**449463**	**459305**	**454699**	**375845**	**447445**	**361380**	**434970**	**410082**	**497115**	**432936**	**427887**	**397673**	**439173**	**476485**	**460157**	**417550**	**552722**	**521749**
Section Ca) + Cb)	**Manufacturing and Handicrafts**	**912544**	**932951**	**923883**	**763999**	**908844**	**734152**	**883172**	**832358**	**1009030**	**879881**	**869798**	**807977**	**891367**	**956607**	**931973**	**853701**	**1118536**	**1059509**
35.11	Production, transmission (35.12), distribution (35.13), trade (35.14), of electricity, manufacture, distribution (35.22), trade of gas (35.23), water collection (35.21), treatment and supply (36), and sewerage (37): collection and disposal of waste (38)	36161	36092	35573	36506	37268	36464	37977	37682	39190	36304	34915	33809	33759	35185	35947	35951	38649	38007
Sub-Total 35/36/37/38/39	*Utilities*	*36161*	*36092*	*35573*	*36506*	*37268*	*36464*	*37977*	*37682*	*39190*	*36304*	*34915*	*33809*	*33759*	*35185*	*35947*	*35951*	*38649*	*38007*

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Section D & E	**Electricity, Gas, Steam, Water Supply, Sewerage, Waste Management (Utilities)**	**36161**	**36092**	**35573**	**36506**	**37268**	**36464**	**37977**	**37682**	**39190**	**36304**	**34915**	**33809**	**33759**	**35185**	**35947**	**35951**	**38649**	**38007**
41.2	Construction of residential and non-residential buildings, roads and motorways (42.11), railways and underground railways (42.12), bridges and tunnels (42.13), utility projects for fluids (42.21), utility projects for electricity and telecommunications (42.22), water projects (42.91), other civil engineering projects n.e.c. (42.99)	94494	90323	81860	88097	103312	179587	185203	211603	171234	184520	171645	121392	148356	192265	259626	336648	444425	534294
Sub-Total 41	*Construction*	*94494*	*90323*	*81860*	*88097*	*103312*	*179587*	*185203*	*211603*	*171234*	*184520*	*171645*	*121392*	*148356*	*192265*	*259626*	*336648*	*444425*	*534294*
Section F	**Construction**	**94494**	**90323**	**81860**	**88097**	**103312**	**179587**	**185203**	**211603**	**171234**	**184520**	**171645**	**121392**	**148356**	**192265**	**259626**	**336648**	**444425**	**534294**
45.11	Sale of cars and light motor vehicles, other motor vehicles (45.19), maintenance and repair of motor vehicles (45.2), wholesale of motor vehicle parts and accessories (45.31), retail of motor vehicle parts and accessories (45.32)	8114	8522	8950	9400	9872	10368	10889	11436	12011	12614	13248	14270	15372	16558	17836	19212	20695	22292
Sub-Total 45	*Sale, Maintenance and Repair of Motor Vehicles*	*8114*	*8522*	*8950*	*9400*	*9872*	*10368*	*10889*	*11436*	*12011*	*12614*	*13248*	*14270*	*15372*	*16558*	*17836*	*19212*	*20695*	*22292*
46	Wholesale and retail trade (47)	386918	384182	363418	400722	431215	399067	459577	447780	508080	392639	337110	292844	290849	347874	378362	378529	486456	460768
Sub-Total 46	*Wholesale and Retail Trade*	*386918*	*384182*	*363418*	*400722*	*431215*	*399067*	*459577*	*447780*	*508080*	*392639*	*337110*	*292844*	*290849*	*347874*	*378362*	*378529*	*486456*	*460768*
Section G	**Wholesale and retail trade; repair of motor vehicles and motorcycles**	**395032**	**392704**	**372368**	**410122**	**441087**	**409436**	**470466**	**459217**	**520091**	**405253**	**350358**	**307114**	**306221**	**364433**	**396198**	**397742**	**507151**	**483060**
49.1	Passenger rail transport, interurban, freight rail (49.2)	18238	18091	15572	13318	13608	13806	12647	12088	14028	15915	15392	13889	13510	13481	13322	12888	14437	16002
49.31	Urban and suburban passenger land transport	11989	13031	14165	15396	16735	18190	19772	21492	23361	25392	27600	30000	30680	32452	35082	38080	43132	47608
49.41	Freight transport by road, sea and coast (50.2), warehousing and storage (52.1)	268655	265086	251458	278289	299115	276431	319821	311575	353093	270116	230217	200022	198850	239003	261200	261355	336485	317384
Sub-Total 49/50/51	*Transport*	*298882*	*296209*	*281194*	*307003*	*329458*	*308427*	*352240*	*345155*	*390481*	*311424*	*273209*	*243912*	*243040*	*284936*	*309603*	*312323*	*394054*	*380994*
53.1	Postal activities under universal service obligation	917	1129	1173	1165	1164	1117	1128	1170	1527	1741	1786	1868	3260	3318	3595	3800	3831	4035
Sub-Total 53	*Postal Services*	*917*	*1129*	*1173*	*1165*	*1164*	*1117*	*1128*	*1170*	*1527*	*1741*	*1786*	*1868*	*3260*	*3318*	*3595*	*3800*	*3831*	*4035*
Section H	**Transportation and**	**299800**	**297337**	**282367**	**308168**	**330622**	**309544**	**353368**	**346324**	**392008**	**313165**	**274994**	**245779**	**246300**	**288254**	**313198**	**316123**	**397884**	**385029**

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
	Storage																		
55.1	Hotels and similar accommodation, holiday and other short-stay accommodation (55.2), restaurants and mobile food service activities (56.1), other food service activities (56.29), beverage serving activities (56.3)	128902	131455	134065	136732	139459	142245	145091	147999	150969	154004	157102	162417	167912	173592	179465	185536	191813	198302
Sub-Total 55	*Hotel, Café and Bar Services*	*128902*	*131455*	*134065*	*136732*	*139459*	*142245*	*145091*	*147999*	*150969*	*154004*	*157102*	*162417*	*167912*	*173592*	*179465*	*185536*	*191813*	*198302*
Section I	**Accommodation and Food Service Activities**	**128902**	**131455**	**134065**	**136732**	**139459**	**142245**	**145091**	**147999**	**150969**	**154004**	**157102**	**162417**	**167912**	**173592**	**179465**	**185536**	**191813**	**198302**
58.11	Book publishing, directories and mailing lists (58.12), newspapers (58.13), other publishing activities (58.19)	991	1064	1144	1229	1320	1419	1525	1638	1760	1891	2032	2183	2346	2521	2708	2910	3127	3360
Sub-Total 58	*Publishing Activities*	*991*	*1064*	*1144*	*1229*	*1320*	*1419*	*1525*	*1638*	*1760*	*1891*	*2032*	*2183*	*2346*	*2521*	*2708*	*2910*	*3127*	*3360*
59.14	Motion picture projection activities	244	268	295	325	358	394	433	477	524	577	635	699	769	846	931	1025	1127	1241
Sub-Total 60	*Broadcasting*	*244*	*268*	*295*	*325*	*358*	*394*	*433*	*477*	*524*	*577*	*635*	*699*	*769*	*846*	*931*	*1025*	*1127*	*1241*
61.1	Wired telecommunications activities	10622	15209	12970	9574	10228	11618	5180	4821	6178	6847	5519	4774	4268	4396	4902	4475	5915	6716
Sub-Total 61	*Telecommunications*	*10622*	*15209*	*12970*	*9574*	*10228*	*11618*	*5180*	*4821*	*6178*	*6847*	*5519*	*4774*	*4268*	*4396*	*4902*	*4475*	*5915*	*6716*
Section J	**Information and Communication**	**11856**	**16541**	**14409**	**11128**	**11906**	**13431**	**7137**	**6936**	**8462**	**9315**	**8186**	**7656**	**7383**	**7763**	**8542**	**8409**	**10169**	**11316**
64.19	Banking: monetary intermediation	6311	10002	9300	13306	12049	13036	15593	20381	31944	53660	52103	46439	30184	67084	57918	82247	72880	75662
Sub-Total 64	*Banking Services*	*6311*	*10002*	*9300*	*13306*	*12049*	*13036*	*15593*	*20381*	*31944*	*53660*	*52103*	*46439*	*30184*	*67084*	*57918*	*82247*	*72880*	*75662*
Section K	**Financial and Insurance Activities**	**6311**	**10002**	**9300**	**13306**	**12049**	**13036**	**15593**	**20381**	**31944**	**53660**	**52103**	**46439**	**30184**	**67084**	**57918**	**82247**	**72880**	**75662**
68.2	Renting and operating of own real estate (including implied rental income)	102455	102833	103224	103626	104042	104471	105249	106042	106850	107672	108511	115851	123261	130743	138301	145937	154073	162293
Sub-Total 68	*Real Estate and Financial Agents*	*102455*	*102833*	*103224*	*103626*	*104042*	*104471*	*105249*	*106042*	*106850*	*107672*	*108511*	*115851*	*123261*	*130743*	*138301*	*145937*	*154073*	*162293*
Section L	**Real Estate Activities**	**102455**	**102833**	**103224**	**103626**	**104042**	**104471**	**105249**	**106042**	**106850**	**107672**	**108511**	**115851**	**123261**	**130743**	**138301**	**145937**	**154073**	**162293**
69.1	Legal activities	41824	44573	46227	46128	46687	46583	47646	34854	35756	36983	37924	37835	37897	37884	37776	37472	37375	37429
Sub-Total 69	*Legal and Accounting*	*41824*	*44573*	*46227*	*46128*	*46687*	*46583*	*47646*	*34854*	*35756*	*36983*	*37924*	*37835*	*37897*	*37884*	*37776*	*37472*	*37375*	*37429*
71.11	Architectural activities, engineering activities and related technical consultancy (71.12)	8781	9118	9467	9831	10208	10599	11006	11428	11867	12322	12795	12990	13188	13389	13593	13801	14011	14225
Sub-Total 71	*Architectural and Engineering Activities*	*8781*	*9118*	*9467*	*9831*	*10208*	*10599*	*11006*	*11428*	*11867*	*12322*	*12795*	*12990*	*13188*	*13389*	*13593*	*13801*	*14011*	*14225*
74.2	Photographic activities	2484	2619	2761	2910	3068	3235	3410	3595	3790	3995	4212	4384	4562	4748	4942	5143	5353	5571
74.3	Translation and interpretation activities, other professional, scientific and technical activities n.e.c. (74.9)	2592	2861	3159	3487	3849	4249	4691	5178	5716	6310	6966	6959	6952	6944	6937	6930	6923	6915

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Sub-Total 74	*Translation and Interpretation Activities, Certifying Offices*	*5076*	*5480*	*5919*	*6397*	*6917*	*7484*	*8101*	*8773*	*9506*	*10306*	*11178*	*11342*	*11514*	*11692*	*11879*	*12073*	*12275*	*12486*
Section M	**Professional, Scientific and Technical Activities**	**55681**	**59171**	**61614**	**62356**	**63812**	**64666**	**66753**	**55056**	**57129**	**59611**	**61897**	**62167**	**62599**	**62966**	**63248**	**63345**	**63661**	**64140**
84.11	General public administration activities	80837	94798	103040	102545	105943	105484	108203	112383	133474	159365	160469	137415	177080	165638	183814	188022	174284	185169
84.12	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security, regulation of and contribution to more efficient operation of businesses (84.13)	10039	12033	12545	12917	12293	11548	12545	13941	19080	22648	25687	26557	28328	28023	30460	28910	28305	30234
84.21	Foreign affairs	0	0	0	0	0	0	0	711	842	934	1510	1880	1935	2003	689	599	593	600
84.23	Justice and judicial activities	4409	4922	4688	5038	4948	4761	4688	23253	27503	28916	28584	28183	31757	32237	31945	31182	4409	4409
84.24	Public order and safety activities, fire service activities (84.24), compulsory social security activities (84.3)	39280	47211	53802	56470	55573	54906	53802	56649	67858	75637	76915	55451	57150	58209	59880	57073	39280	39280
Sub-Total 84	*Public Administration*	*134565*	*158964*	*174075*	*176970*	*178757*	*176699*	*179237*	*206937*	*248757*	*287500*	*293165*	*249486*	*296249*	*286110*	*306789*	*305785*	*246872*	*259692*
Section O	**Public Administration and Defence / Social Security**	**134565**	**158964**	**174075**	**176970**	**178757**	**176699**	**179237**	**206937**	**248757**	**287500**	**293165**	**249486**	**296249**	**286110**	**306789**	**305785**	**246872**	**259692**
85.1	Pre-primary education, primary education (85.2), general secondary education (85.31), technical and vocational secondary education (85.32), tertiary education (85.42), sports and recreation education (85.51), cultural education (85.52), other education n.e.c. (85.59)	102199	107712	113249	118843	124733	131111	137765	144767	152422	253288	269168	269219	170802	170978	171338	172135	173277	174223
Sub-Total 85	*Education*	*102199*	*107712*	*113249*	*118843*	*124733*	*131111*	*137765*	*144767*	*152422*	*253288*	*269168*	*269219*	*170802*	*170978*	*171338*	*172135*	*173277*	*174223*
Section P	**Education**	**102199**	**107712**	**113249**	**118843**	**124733**	**131111**	**137765**	**144767**	**152422**	**253288**	**269168**	**269219**	**170802**	**170978**	**171338**	**172135**	**173277**	**174223**
86.1	Hospital activities, general medical practice activities (86.31), residential care activities for mental retardation, mental health (87.2), residential care activities for the elderly and disabled (87.3)	40327	37888	43361	42333	43353	43325	44487	45913	50561	55162	56159	57780	58366	60267	63602	64895	68934	73175
86.23	Dental practice activities	5032	5526	6068	6664	7318	8036	8824	9690	10641	11686	12832	13190	13557	13934	14322	14721	15131	15552
86.22	Specialist medical practice activities (midwives), other human health activities (86.9)	10608	10923	11246	11580	11923	12277	12641	13016	13401	13799	14208	14273	14338	14404	14470	14536	14603	14670

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Sub-Total 86/87/88/89	*Healthcare*	*55967*	*54336*	*60676*	*60577*	*62594*	*63637*	*65953*	*68619*	*74604*	*80647*	*83199*	*85243*	*86261*	*88605*	*92395*	*94152*	*98668*	*103398*
Section Q	**Human Health and Social Work**	**55967**	**54336**	**60676**	**60577**	**62594**	**63637**	**65953**	**68619**	**74604**	**80647**	**83199**	**85243**	**86261**	**88605**	**92395**	**94152**	**98668**	**103398**
90.01	Performing arts, support activities to performing arts (90.02), artistic creation (90.03), operation of arts facilities (90.04)	15174	15722	16297	16902	17537	18206	18911	19654	20438	21265	22140	22348	22589	22861	23166	23501	23866	24261
Sub-Total 90	*Performing Arts*	*15174*	*15722*	*16297*	*16902*	*17537*	*18206*	*18911*	*19654*	*20438*	*21265*	*22140*	*22348*	*22589*	*22861*	*23166*	*23501*	*23866*	*24261*
91.01	Library and archives activities, museums (91.02), operation of historical sites and buildings and similar visitor attractions (91.03), botanical and zoological gardens and nature reserves activities (91.04)	0	0	0	0	0	0	0	0	0	0	0	0	0	143	1288	1840	2835	3250
Sub-Total 91	*Cultural Activities*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*143*	*1288*	*1840*	*2835*	*3250*
93.29	Other amusement and recreation activities (Prostitution)	8262	8097	7935	7776	7620	7468	7318	7172	7028	6888	6750	6615	6483	6353	6226	6101	5979	5859
Sub-Total 92/93	*Sports and Other Recreation*	*8262*	*8097*	*7935*	*7776*	*7620*	*7468*	*7318*	*7172*	*7028*	*6888*	*6750*	*6615*	*6483*	*6353*	*6226*	*6101*	*5979*	*5859*
Section R	**Arts, Entertainment and Recreation**	**23436**	**23819**	**24232**	**24678**	**25158**	**25674**	**26230**	**26826**	**27466**	**28153**	**28890**	**28963**	**29071**	**29357**	**30679**	**31441**	**32680**	**33371**
94.91	Activities of religious organisations	12153	12427	12707	12993	13285	13585	13890	14203	14523	14850	15184	14904	14628	14358	14093	13833	13577	13326
Sub-Total 94	*Relegious Activities*	*12153*	*12427*	*12707*	*12993*	*13285*	*13585*	*13890*	*14203*	*14523*	*14850*	*15184*	*14904*	*14628*	*14358*	*14093*	*13833*	*13577*	*13326*
95.12	Repair of communication equipment, of consumer electronics (95.21), household appliances and home and garden equipment (95.22), other personal and household goods (95.29)	1557	1742	1949	2181	2440	2729	3054	3416	3822	4276	4784	5352	5988	6699	7495	8385	9381	10495
95.23	Repair of footwear and leather goods, furniture and home furnishings (95.24)	70	87	109	135	169	210	262	326	406	506	630	669	710	753	800	849	901	956
95.25	Repair of watches, clocks and jewellery	6020	5977	5934	5891	5848	5806	5764	5723	5682	5641	5600	5850	6111	6384	6669	6966	7277	7602
Sub-Total 95	*Repair Services*	*7647*	*7806*	*7991*	*8207*	*8457*	*8746*	*9080*	*9465*	*9910*	*10422*	*11014*	*11871*	*12809*	*13836*	*14963*	*16200*	*17559*	*19053*
96.02	Hairdressing and men's haircuts	18598	20112	21749	23520	25435	27506	29745	32167	34786	37618	40681	41473	42281	43105	43945	44801	45674	46564
96.03	Funeral and related activities																		
96.04	Physical well-being activities (bath houses)	3550	3737	3935	4143	4362	4593	4836	5092	5361	5645	5944	5995	6048	6100	6153	6207	6261	6315
96.09	Other personal service activities n.e.c. (shoe blacks)	1316	1353	1390	1429	1468	1509	1551	1594	1638	1683	1730	1747	1764	1782	1799	1817	1835	1853

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Sub-Total 96	*Personal Services outside the Household*	*23464*	*25202*	*27075*	*29092*	*31266*	*33608*	*36132*	*38853*	*41785*	*44946*	*48354*	*49215*	*50093*	*50987*	*51897*	*52825*	*53770*	*54732*
Section S	**Other Service Activities**	**43265**	**45435**	**47773**	**50292**	**53008**	**55938**	**59102**	**62521**	**66218**	**70218**	**74552**	**75990**	**77530**	**79181**	**80953**	**82858**	**84906**	**87112**
97	Activities of households as employers of domestic personnel	68545	72022	75834	80038	84702	89909	95759	102372	109895	118505	128415	129726	131254	133013	135016	137281	139823	142662
Sub-Total 97	*Personal Services*	*68545*	*72022*	*75834*	*80038*	*84702*	*89909*	*95759*	*102372*	*109895*	*118505*	*128415*	*129726*	*131254*	*133013*	*135016*	*137281*	*139823*	*142662*
Section T	**Activities of Households as Employers; Undifferentiated goods and Services-Producing Activities of Households For Own Use**	**68545**	**72022**	**75834**	**80038**	**84702**	**89909**	**95759**	**102372**	**109895**	**118505**	**128415**	**129726**	**131254**	**133013**	**135016**	**137281**	**139823**	**142662**
Total Value Added	***GDP at Factor Prices***	***3732544***	***4001854***	***4125691***	***4029952***	***4342975***	***4169484***	***4678897***	***4574781***	***5189706***	***4911844***	***4605234***	***4213399***	***4232438***	***4755859***	***5318422***	***5237377***	***6226713***	***6544460***

Appendix C: Maltese GDP at factor cost, 1921-1938

Notes on the Maltese GDP:

The value added is categorised based on the NACE rev.2 nomenclature of the European Union [1]. The European Union nomenclature divides output into broad economic sectors, labelled A to U. For example agriculture, forestry and fishing are summed as economic sector A. These sectors are in bold in the general table, while a summary table is provided below. The breakdown of GDP beaks up these sectors in industrial divisions identified by digit codes: thus agriculture is 1, forestry 2, and so on. The value added of these industrial divisions is shaded and in italics. These are broken down into industrial groups and classes, indentified by three or four digits: for example, growing of cereals is 1.11, and of vegetables 1.13. Some industrial sections/divisions/groups and classes were added together if the industries were involved in similar production and a greater disaggregation was not possible. Where it was not possible to estimate a product, or where the NACE category was not applicable for Malta, the category was removed. These non-estimated sectors are just a small share of GDP. The handicraft sector was estimated separately from the manufacturing sector, and given below the formal manufacturing sector in a different shaded font, thus allowing for a duplication of some categories. Thus the total production of industry is divided in formal manufacturing and handicraft. If one is interested, for example, in evaluating total textile production one can add the digits 13, 14, 15 of both the manufacturing and the handicraft sectors. All estimates here are given in constant 1938 pounds sterling and match the estimates in the thesis; it was only Cypriot output that was adjusted upwards through PPP in Chapter 3.

[1] For more information see: Eurostat, *NACE Rev.2: Statistical Classification of Economic Activity*, (Luxembourg: Eurostat, 2008)

Table A.6: Summary of Maltese GDP, 1921-1938, in constant 1938 Pound Sterling.

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Section A - Total	AGRICULTURE, FORESTRY AND FISHING	372866	424437	441760	487282	508524	531002	530010	515842	577392	526603	523480	507588	499427	607110	543143	449767	542685	554996
Section B	MINING AND QUARRYING	25161	60356	75896	87003	83564	99791	134861	146053	149474	144962	153038	163547	157790	145472	133906	137655	143304	142834
Section Ca) + Cb)	Manufacturing and Handicraft (TOTAL)	1371109	1494191	1590044	1681692	1679011	1705825	1701916	1596788	1715321	1658225	1721452	1754641	1846702	1727032	2009949	1732666	1872441	1941032
Section D & E	Electricity, Gas, Steam, Water Supply, Sewerage, Waste Management (Utilities)	78456	34291	34291	38825	43831	44028	48415	54179	54032	59573	58832	59390	63064	67071	69648	76748	85526	101249
Section F	Construction	92034	120988	148498	184890	210814	239299	247597	279616	301546	394718	474906	543857	580259	685005	650832	677922	673733	355449
Section G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	984054	1065326	1146159	1269180	1303495	1328408	1291970	1208049	1317638	1259611	1213857	1260246	1297219	1313549	1415307	1275118	1408612	1423729
Section H	Transportation and Storage	759295	822722	885932	969379	1005025	1062766	1059695	942193	1047994	997187	972175	1001774	1029235	1051784	1140628	1057984	1171817	1220793
Section I	Accommodation and Food Service Activities	70735	72450	74260	76169	78182	80307	82549	84914	87411	90045	92825	100223	108283	117071	126658	137122	148551	161042
Section J	Information and Communication	19128	20146	21218	22348	23537	24790	26110	27499	28963	30505	32129	32472	33446	36181	36112	36547	37016	37802
Section K	Financial and Insurance Activities	14044	14565	15106	15666	16247	16850	17476	18124	18796	19494	20217	20619	21028	21446	21872	22306	22749	23201
Section L	Real Estate Activities	177478	172499	168710	165490	162636	159611	158168	157564	157755	159991	163229	169190	176823	185963	194090	201571	208765	208732
Section M	Professional, Scientific and Technical Activities	135111	139645	142097	144780	147779	150579	153517	156875	160598	164280	168449	167978	167432	166965	170059	169860	169321	169106
Section N	Administrative and Support Service Activities	12230	12279	12337	12405	12482	12570	12668	12777	12897	13028	13171	13171	13171	13171	13171	13171	4850	13171
Section O	Public Administration and Defence / Social Security	138061	159796	162823	185966	185385	183996	189490	205417	232419	244633	270588	272795	272736	293281	295256	312926	322563	347144
Section P	Education	107364	125250	127798	135690	145291	147004	150632	159371	171495	178874	192932	199798	201387	216699	219876	227194	230605	235459
Section Q	Human Health and Social Work	49598	52782	53649	55409	57414	57844	59097	60974	63535	65144	67627	68189	69042	70990	70534	72272	73524	75596
Section R	Arts, Entertainment and Recreation	54477	57803	59385	61995	64816	67547	70462	73555	76838	80289	83872	83595	83284	83090	82857	82751	82412	83052
Section S	Other Religious and Professional Organisations	61422	62024	62619	63260	63802	64414	65033	65657	66287	66923	67566	67353	67142	66931	66720	66510	66301	66093
Section S + T	Other Personal Services (From Section S) Activities of Households as Employers; Undifferentiated goods and Services-Producing Activities of Households For Own Use	202929	208326	213866	219553	225391	231385	237539	243855	250340	256998	263832	262748	261668	260592	259521	258455	257392	256335
Total Value Added	***GDP at Factor Prices***	***4725551***	***5119876***	***5436448***	***5876981***	***6017227***	***6208017***	***6237203***	***6009303***	***6490731***	***6411082***	***6554176***	***6749173***	***6949134***	***7129401***	***7520138***	***7008544***	***7522168***	***7416814***

Table A.7: Breakdown of Maltese GDP, 1921-1938 in constant 1938, Pound Sterling.

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
1.11	Growing of cereals (except rice), leguminous crops and oil seeds	67926	58643	63301	65703	66800	72804	72331	74677	71954	73716	67032	69795	72299	75083	43948	52804	72236	64343
1.13	Growing of vegetables and melons, roots and tubers	100939	110943	141533	130326	135193	175252	172955	175122	183000	175252	175859	163950	162712	248802	139411	158710	205244	185942
1.15	Growing of tobacco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	318	360
1.16	Growing of fibre crops	1576	3447	1141	702	3394	4630	3002	2029	3206	2243	1735	1195	242	185	117	189	164	154
1.19	Growing of other non-perennial crops	63476	49792	80304	90457	90201	98015	92908	99503	105376	99361	98691	103133	70452	81098	94227	50461	72211	96089
1.23	Growing of citrus fruits	1111	2584	2380	2554	2459	2641	2604	2141	2269	2542	2660	1032	2192	2883	2578	2116	2297	2342
1.24	Growing of pome fruits and stone fruits / nuts (1.25), growing of grapes (1.21)	24573	18249	25124	50160	41841	50103	70120	44393	87223	50331	38843	39811	54064	36698	37761	27375	32097	43030
1.28	Growing of spices, aromatic, drug and pharmaceutical crops	353	940	4681	13668	22505	10206	6918	7980	10510	11901	10305	5203	4727	9052	5986	5599	3820	3315
1.41	Raising of dairy cattle, cattle and buffaloes (1.42)	24120	41675	24955	19443	33334	28114	26321	32746	30232	30780	33646	31327	36019	40875	39987	40028	35382	38490
1.43	Raising of horses and other equines, camelids (1.43), sheep and goats (1.45), swine, pigs (1.46)	24888	56642	3221	451	26737	31275	24932	26098	23661	24442	43927	31220	37046	29352	31997	33270	36766	31914
1.5	Ancillary activities on farm, distilling, rectifying and blending of spirits, manufacture of wine from grape (11.02), manufacture of cider and other fruit wines (11.03),	3874	8955	17289	17854	13621	14679	12555	15869	16231	16069	14732	25589	24107	21798	33817	22947	25883	32748
Sub-Total 1	*Agriculture*	*312837*	*351869*	*363928*	*391318*	*436084*	*487719*	*484646*	*480558*	*533661*	*486639*	*487429*	*472256*	*463859*	*545825*	*429829*	*393498*	*486417*	*498728*
2.1	Silviculture and other forestry activities (pruning firewood)	2149	2578	2750	3008	3438	3094	3300	3309	7649	7520	3266	2802	2931	2931	2931	2931	2931	2931
Sub-Total 2	*Forestry*	*2149*	*2578*	*2750*	*3008*	*3438*	*3094*	*3300*	*3309*	*7649*	*7520*	*3266*	*2802*	*2931*	*2931*	*2931*	*2931*	*2931*	*2931*
3.11	Marine fishing, sponge fishing	57880	69990	75082	92957	69002	40189	42063	31975	36082	32444	32785	32530	32637	58354	110383	53338	53338	53338
Sub-Total 3	*Fishing*	*57880*	*69990*	*75082*	*92957*	*69002*	*40189*	*42063*	*31975*	*36082*	*32444*	*32785*	*32530*	*32637*	*58354*	*110383*	*53338*	*53338*	*53338*
Section A - Total	**AGRICULTURE, FORESTRY AND FISHING**	372866	424437	441760	487282	508524	531002	530010	515842	577392	526603	523480	507588	499427	607110	543143	449767	542685	554996
8.11	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate, asbestos	24722	59962	75450	86557	82620	98831	133838	145318	148871	144227	151962	162445	156740	143504	132069	135877	141668	141128
8.93	Extraction of salt	438	394	446	446	945	960	1023	735	604	735	1076	1102	1050	1968	1837	1778	1636	1706
Sub-Total 8	*Quarrying and other mining*	*25161*	*60356*	*75896*	*87003*	*83564*	*99791*	*134861*	*146053*	*149474*	*144962*	*153038*	*163547*	*157790*	*145472*	*133906*	*137655*	*143304*	*142834*
Section B	**MINING AND QUARRYING**	**25161**	**60356**	**75896**	**87003**	**83564**	**99791**	**134861**	**146053**	**149474**	**144962**	**153038**	**163547**	**157790**	**145472**	**133906**	**137655**	**143304**	**142834**
10.39	Other processing and preserving of fruit and vegetables, manufacture of fruit and vegetable juice (10.32)	6402	6625	6625	4103	3544	5841	5047	6197	7181	5601	4024	3503	2711	5111	11315	3492	6503	6197
10.52	Manufacture of ice cream	4282	6124	7232	8277	7525	7515	7505	7270	6186	4802	3672	3249	3249	4096	4520	4379	4379	4379
10.61	Manufacture of grain mill products (including bran and forage milling)	52755	63201	54668	55633	62967	77430	77875	60875	79910	61482	80205	79859	85159	70282	121808	50547	82636	86654

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
10.71	Manufacture of bread	350205	350001	345114	321079	330017	368241	375763	286537	373032	329028	396018	369853	410925	348278	482487	264063	360372	401185
10.82	Manufacture of cocoa, chocolate and sugar confectionery	2069	1945	1807	2248	2180	1147	1096	1426	1843	1624	1639	1809	1752	2295	1906	1522	1742	1937
11.04	Manufacture of other non-distilled fermented beverages, beer (11.05), malt (11.06), soft drinks, mineral waters and other bottled waters (11.07)	16962	21322	23946	26422	24639	24616	24592	29309	26743	23466	24384	29304	30564	36162	32291	37244	25513	30823
Sub-Total 10/11	*Food and Drinks Processing*	*432675*	*449218*	*439392*	*417762*	*430872*	*484790*	*491878*	*391614*	*494895*	*426003*	*509943*	*487576*	*534360*	*466224*	*654327*	*361248*	*481145*	*531175*
12	Manufacture of tobacco	24848	31452	34698	36769	41582	27367	29438	38112	30921	23729	26080	27647	38952	53335	49473	59659	59659	59659
Sub-Total 12	*Tobacco Manufacturing*	*24848*	*31452*	*34698*	*36769*	*41582*	*27367*	*29438*	*38112*	*30921*	*23729*	*26080*	*27647*	*38952*	*53335*	*49473*	*59659*	*59659*	*59659*
13.91	Manufacture of knitted and crocheted fabrics, made-up textile articles, except apparel (13.92), carpets and rugs(13.93)	783	1713	567	349	1687	2301	1492	1008	1593	1115	862	594	120	92	58	94	81	76
14.12	Manufacture of workwear, other outerwear(14.13), underwear (14.14), knitted and crocheted hosiery (14.31), other knitted and crocheted apparel (14.39)	0	0	0	0	0	0	0	0	0	0	0	0	1766	1408	1119	1343	1567	1567
14.19	Manufacture of other wearing apparel and accessories	2229	1959	4635	5305	4823	4817	4810	4660	3965	3078	2798	3022	3022	3022	3022	2854	2910	2854
Sub-Total 13/14/15	*Preparation of Textiles, Clothes and Footwear*	*3012*	*3672*	*5202*	*5654*	*6509*	*7117*	*6302*	*5668*	*5558*	*4193*	*3661*	*3616*	*4909*	*4522*	*4200*	*4291*	*4559*	*4498*
18.11	Printing of newspapers, Other printing (18.12), binding and related services (18.14)	14607	20601	23929	27272	25403	25386	25429	25130	22167	18274	20342	19907	19394	21838	24133	21752	21547	22316
Sub-Total 17/18	*Paper and Printing Works*	*14607*	*20601*	*23929*	*27272*	*25403*	*25386*	*25429*	*25130*	*22167*	*18274*	*20342*	*19907*	*19394*	*21838*	*24133*	*21752*	*21547*	*22316*
20.12	Manufacture of dyes and pigments, other inorganic basic chemicals (20.13), other organic basic chemicals (20.14), paints, varnishes and similar coatings, printing ink and mastics (20.3)	403	576	680	778	708	707	706	684	582	452	397	1874	2317	1847	1847	1847	1623	1623
20.41	Manufacture of soap and detergents, cleaning and polishing preparations	19	27	32	37	33	33	33	32	27	21	19	88	109	87	224	116	135	895
20.51	Manufacture of explosives	0	0	0	0	0	0	0	0	0	224	224	224	33	1399	1399	560	616	895
Sub-Total 19/20/21	*Chemical Industry*	*422*	*603*	*712*	*815*	*741*	*740*	*739*	*716*	*609*	*697*	*639*	*2186*	*2458*	*3333*	*3470*	*2523*	*2373*	*3414*
23.11	Manufacture of flat glass, shaping and processing of flat glass (23.12), hollow glass (21.13), processing of other glass, (23.19)	482	690	815	933	848	847	846	819	697	541	476	2245	2776	2213	1759	1759	1847	2111
23.41	Manufacture of ceramic household and ornamental articles, other ceramic products (23.49)	574	820	969	1109	1008	1007	1005	974	829	643	565	2669	3300	2630	2630	1175	1903	2239
23.52	Manufacture of lime and	169	241	285	326	297	296	296	287	244	189	166	786	971	774	616	895	1007	1175

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
	plaster																		
23.61	Manufacture of concrete products for construction purposes, other articles of concrete, plaster and cement (23.69)	5589	7993	9439	10804	9821	9808	9795	9489	8074	6268	6828	7108	7052	9066	8731	6212	8339	8227
Sub-Total 22/23	*Manufacture of Construction Materials*	*6814*	*9744*	*11508*	*13172*	*11974*	*11958*	*11942*	*11568*	*9844*	*7642*	*8035*	*12807*	*14099*	*14684*	*13735*	*10042*	*13096*	*13751*
24.1	Manufacture of basic iron and steel and of ferro-alloys, tubes, pipes, hollow profiles and related fittings, of steel (24.2), Cold drawing or forming of bars or wire, narrow strips (24.3)	0	0	0	0	0	0	0	0	0	0	0	0	0	1935	10729	10729	15127	6596
24.51	Casting of iron, steel (24.52), light metals (24.53)	1399	2001	2363	2705	2459	2455	2452	2375	2021	1569	1379	6510	8050	6416	5101	2199	2199	6508
25.5	Forging, pressing, stamping and roll-forming of metal; powder metallurgy, treatment and coating of metals (25.61), Machining (25.62)	482	690	815	933	848	847	846	819	697	541	476	2245	2776	3004	3166	1935	1455	2127
Sub-Total 24/25	*Iron Founding and Metal Manufacture*	*1882*	*2691*	*3178*	*3637*	*3307*	*3302*	*3298*	*3195*	*2718*	*2110*	*1855*	*8755*	*10825*	*11355*	*18996*	*14863*	*18780*	*15230*
29.1	Manufacture of motor vehicles, of bodies (coachwork) for motor vehicles, trailers and semi-trailers (29.2), electrical and electronic equipment for motor vehicles (29.31), other parts and accessories	4101	5865	6926	7927	7206	7197	7187	6963	5925	4599	4042	19081	23593	18806	14951	3598	3598	3598
30.11	Building of ships and floating structures, pleasure and sporting boats (30.12)	588065	662803	745033	837031	810358	785789	761977	738497	756785	774538	736898	770648	804520	751217	855002	901191	923037	949254
32.12	Manufacture of jewellery and related articles, imitation jewellery and related articles (32.13)	6352	9083	10727	12278	11162	11147	11132	10784	9176	7124	7299	7299	8355	8707	11521	4573	4661	7739
32.99	Other manufacturing n.e.c.	1196	1710	2019	2311	2101	2098	2095	2030	1727	1341	1178	5562	6878	5482	4358	4477	5149	4869
Sub-Total 26/27/28/29/30/31/32	*General Manufacturing*	*599713*	*679461*	*764705*	*859548*	*830827*	*806231*	*782392*	*758273*	*773613*	*787602*	*749418*	*802591*	*843346*	*784212*	*885832*	*913839*	*936445*	*965459*
Section C a)	**Manufacturing (Formal)**	**1083973**	**1197442**	**1283325**	**1364629**	**1351215**	**1366892**	**1351417**	**1234276**	**1340326**	**1270250**	**1319972**	**1365084**	**1468342**	**1359502**	**1654166**	**1388216**	**1537604**	**1615502**
13.91	Manufacture of knitted and crocheted fabrics, made-up textile articles, except apparel (13.92), carpets and rugs(13.93)	2956	3110	3270	3438	3612	3793	3982	4179	4384	4598	4821	4845	4875	4904	4907	4910	4940	4969
14	Manufacture of wearing apparel	100738	104663	108716	112899	117220	121682	126290	131052	135971	141055	146309	140922	135801	130857	125793	120918	116523	112280
14.19	Manufacture of other wearing apparel and accessories	2335	2522	2724	2941	3175	3426	3697	3989	4303	4641	5005	5032	5063	5093	5111	5129	5160	5191

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
15.11	Tanning and dressing of leather; dressing and dyeing of fur, manufacture of leather clothes (14.11), luggage, handbags and the like, saddlery and harness (15.12)	2951	2870	2821	2799	2800	2819	2855	2904	2966	3038	3119	2771	2468	2202	1958	1745	1568	1413
15.2	Manufacture of footwear	64250	65492	66741	67999	69267	70544	71831	73130	74441	75764	77101	74481	71986	69570	67075	64665	62499	60401
Sub-Total 13/14/15	*Preparation of Textiles, Clothes and Footwear*	*173230*	*178658*	*184273*	*190076*	*196072*	*202263*	*208655*	*215254*	*222065*	*229096*	*236354*	*228052*	*220193*	*212626*	*204845*	*197367*	*190689*	*184254*
16.24	Manufacture of wooden containers	3984	4171	4364	4564	4771	4985	5207	5438	5676	5923	6179	5852	5548	5259	4959	4675	4432	4201
16.29	Manufacture of other products of wood, articles of cork, straw and plaiting materials	62804	66211	69784	73532	77465	81592	85925	90475	95253	100271	105543	102747	100136	97575	94575	91655	89324	87040
Sub-total 16	*Wood Processing*	*66787*	*70381*	*74148*	*78096*	*82236*	*86578*	*91133*	*95912*	*100929*	*106194*	*111722*	*108599*	*105684*	*102835*	*99534*	*96330*	*93757*	*91241*
25.4	Manufacture of weapons and ammunition	353	338	324	310	296	283	270	258	246	235	224	231	239	247	253	260	269	278
25.5	Forging, pressing, stamping and roll-forming of metal; powder metallurgy, treatment and coating of metals (25.61), Machining (25.62)	1754	1738	1721	1703	1685	1667	1648	1628	1609	1589	1569	1553	1539	1525	1503	1482	1469	1455
25.71	Manufacture of cutlery	143	161	180	201	225	252	282	316	353	395	442	455	469	484	498	512	528	545
25.73	Manufacture of tools	42833	43402	43956	44496	45023	45538	46041	46533	47016	47489	47954	47604	47310	47009	46463	45916	45631	45341
Sub-Total 24/25	*Iron Founding and Metal Manufacture*	*45084*	*45639*	*46180*	*46710*	*47229*	*47739*	*48241*	*48735*	*49224*	*49708*	*50188*	*49844*	*49557*	*49265*	*48718*	*48171*	*47897*	*47619*
30.99	Manufacture of other transport equipment n.e.c.	540	583	629	678	732	788	849	915	985	1060	1141	1006	888	784	688	604	533	470
32.2	Manufacture of musical instruments	205	244	292	348	415	495	590	704	839	1000	1192	1193	1194	1195	1194	1193	1194	1196
32.99	Other manufacturing n.e.c.	1290	1244	1198	1154	1111	1070	1030	991	954	918	883	863	844	825	805	785	767	750
Sub-Total 26,27,28,29, 30, 31, 32	*General Manufacturing*	*2035*	*2071*	*2119*	*2181*	*2258*	*2354*	*2470*	*2610*	*2778*	*2978*	*3215*	*3061*	*2926*	*2804*	*2686*	*2581*	*2494*	*2416*
Section C b)	**Handicraft**	**287136**	**296749**	**306719**	**317063**	**327795**	**338934**	**350499**	**362511**	**374995**	**387976**	**401480**	**389557**	**378360**	**367530**	**355783**	**344449**	**334837**	**325530**
Section Ca) + Cb)	**Manufacturing and Handicraft (TOTAL)**	**1371109**	**1494191**	**1590044**	**1681692**	**1679011**	**1705825**	**1701916**	**1596788**	**1715321**	**1658225**	**1721452**	**1754641**	**1846702**	**1727032**	**2009949**	**1732666**	**1872441**	**1941032**
35.11	Production, transmission (35.12), distribution (35.13), and trade (35.14) of electricity, manufacture, distribution (35.22), trade (35.23) of gas (35.21), water collection, treatment and supply (36), and sewerage (37): collection and disposal of waste (38)	78456	34291	34291	38825	43831	44028	48415	54179	54032	59573	58832	59390	63064	67071	69648	76748	85526	101249
Sub-Total 35, 36, 37, 38, 39	*Utilities*	*78456*	*34291*	*34291*	*38825*	*43831*	*44028*	*48415*	*54179*	*54032*	*59573*	*58832*	*59390*	*63064*	*67071*	*69648*	*76748*	*85526*	*101249*
Section D & E	**Electricity, Gas, Steam, Water Supply, Sewerage, Waste Management (Utilities)**	**78456**	**34291**	**34291**	**38825**	**43831**	**44028**	**48415**	**54179**	**54032**	**59573**	**58832**	**59390**	**63064**	**67071**	**69648**	**76748**	**85526**	**101249**

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
41.2	Construction of residential and non-residential buildings, roads and motorways (42.11), railways and underground railways (42.12), bridges and tunnels (42.13), utility projects for fluids (42.21), utility projects for electricity and telecommunications (42.22), water projects (42.91), other civil engineering projects n.e.c. (42.99)	92034	120988	148498	184890	210814	239299	247597	279616	301546	394718	474906	543857	580259	685005	650832	677922	673733	355449
Sub-Total 41	*Construction*	*92034*	*120988*	*148498*	*184890*	*210814*	*239299*	*247597*	*279616*	*301546*	*394718*	*474906*	*543857*	*580259*	*685005*	*650832*	*677922*	*673733*	*355449*
Section F	**Construction**	**92034**	**120988**	**148498**	**184890**	**210814**	**239299**	**247597**	**279616**	**301546**	**394718**	**474906**	**543857**	**580259**	**685005**	**650832**	**677922**	**673733**	**355449**
45.11	Sale of cars and light motor vehicles, Sale of other motor vehicles (45.19), wholesale of motor vehicle parts and accessories (45.31), retail of motor vehicle parts and accessories (45.32)	27915	29855	31931	34150	36523	39062	41777	44681	47786	51108	54660	54660	54660	54660	54660	54660	54660	54660
Sub-Total 45	*Sale, Maintenance and Repair of Motor Vehicles*	*27915*	*29855*	*31931*	*34150*	*36523*	*39062*	*41777*	*44681*	*47786*	*51108*	*54660*	*54660*	*54660*	*54660*	*54660*	*54660*	*54660*	*54660*
46	Wholesale and retail trade (47)	956139	1035471	1114228	1235030	1266971	1289346	1250193	1163369	1269852	1208504	1159197	1205586	1242559	1258889	1360648	1220458	1353952	1369069
Sub-Total 46, 47	*Wholesale and Retail Trade*	*956139*	*1035471*	*1114228*	*1235030*	*1266971*	*1289346*	*1250193*	*1163369*	*1269852*	*1208504*	*1159197*	*1205586*	*1242559*	*1258889*	*1360648*	*1220458*	*1353952*	*1369069*
Section G	**Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles**	**984054**	**1065326**	**1146159**	**1269180**	**1303495**	**1328408**	**1291970**	**1208049**	**1317638**	**1259611**	**1213857**	**1260246**	**1297219**	**1313549**	**1415307**	**1275118**	**1408612**	**1423729**
49.1	Passenger rail transport, interurban, freight(49.2)	11371	8242	7698	9280	9506	9846	10603	11301	9569	9189	8624	0	0	0	0	0		0
49.31	Urban and suburban passenger land transport	51715	56212	61100	66414	72189	78466	85290	92707	100769	109531	119056	129410	132340	139987	151328	164263	186054	205360
49.41	Freight transport by road, sea and coast, (50.2), warehousing and storage (52.1)	682956	739622	795877	882164	904980	920961	892995	830978	907037	863217	827998	861133	887542	899206	971891	871756	967109	977906
Sub-Total 49, 50, 51	*Transport*	*746042*	*804076*	*864676*	*957857*	*986675*	*1009274*	*988888*	*934985*	*1017375*	*981938*	*955678*	*990542*	*1019883*	*1039193*	*1123219*	*1036019*	*1153163*	*1183267*
53.1	Postal activities under universal service obligation	13253	18646	21256	11522	18350	53492	70807	7208	30619	15250	16496	11232	9352	12591	17409	21966	18654	37526
Sub-Total 53	*Postal Services*	*13253*	*18646*	*21256*	*11522*	*18350*	*53492*	*70807*	*7208*	*30619*	*15250*	*16496*	*11232*	*9352*	*12591*	*17409*	*21966*	*18654*	*37526*
Section H	**Transportation and Storage**	**759295**	**822722**	**885932**	**969379**	**1005025**	**1062766**	**1059695**	**942193**	**1047994**	**997187**	**972175**	**1001774**	**1029235**	**1051784**	**1140628**	**1057984**	**1171817**	**1220793**
55.1	Hotels and similar accommodation, holiday and other short-stay (55.2), restaurants and mobile food service activities (56.1), other food service activities (56.29), beverage serving activities (56.3)	70735	72450	74260	76169	78182	80307	82549	84914	87411	90045	92825	100223	108283	117071	126658	137122	148551	161042
Sub-Total 55	*Hotel, Café and Bar Services*	*70735*	*72450*	*74260*	*76169*	*78182*	*80307*	*82549*	*84914*	*87411*	*90045*	*92825*	*100223*	*108283*	*117071*	*126658*	*137122*	*148551*	*161042*
Section I	**Accommodation and Food Service Activities**	**70735**	**72450**	**74260**	**76169**	**78182**	**80307**	**82549**	**84914**	**87411**	**90045**	**92825**	**100223**	**108283**	**117071**	**126658**	**137122**	**148551**	**161042**

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
59.14	Motion picture projection activities	19128	20146	21218	22348	23537	24790	26110	27499	28963	30505	32129	31980	31833	31686	31539	31393	31248	31104
Sub-Total 60	*Broadcasting*	*19128*	*20146*	*21218*	*22348*	*23537*	*24790*	*26110*	*27499*	*28963*	*30505*	*32129*	*31980*	*31833*	*31686*	*31539*	*31393*	*31248*	*31104*
62	Other telecommunications activities	0	0	0	0	0	0	0	0	0	0	0	491	1613	4495	4573	5153	5767	6698
Sub-Total 61	*Telecommunications*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*491*	*1613*	*4495*	*4573*	*5153*	*5767*	*6698*
Section J	**Information and Communication**	**19128**	**20146**	**21218**	**22348**	**23537**	**24790**	**26110**	**27499**	**28963**	**30505**	**32129**	**32472**	**33446**	**36181**	**36112**	**36547**	**37016**	**37802**
64.19	Banking: monetary intermediation	14044	14565	15106	15666	16247	16850	17476	18124	18796	19494	20217	20619	21028	21446	21872	22306	22749	23201
Sub-Total 64	*Banking Services*	*14044*	*14565*	*15106*	*15666*	*16247*	*16850*	*17476*	*18124*	*18796*	*19494*	*20217*	*20619*	*21028*	*21446*	*21872*	*22306*	*22749*	*23201*
Section K	**Financial and Insurance Activities**	**14044**	**14565**	**15106**	**15666**	**16247**	**16850**	**17476**	**18124**	**18796**	**19494**	**20217**	**20619**	**21028**	**21446**	**21872**	**22306**	**22749**	**23201**
68.2	Renting and operating of own real estate (including implied rental income)	177478	172499	168710	165490	162636	159611	158168	157564	157755	159991	163229	169190	176823	185963	194090	201571	208765	208732
Sub-Total 68	*Real Estate and Financial Agents*	*177478*	*172499*	*168710*	*165490*	*162636*	*159611*	*158168*	*157564*	*157755*	*159991*	*163229*	*169190*	*176823*	*185963*	*194090*	*201571*	*208765*	*208732*
Section L	**Real Estate Activities**	**177478**	**172499**	**168710**	**165490**	**162636**	**159611**	**158168**	**157564**	**157755**	**159991**	**163229**	**169190**	**176823**	**185963**	**194090**	**201571**	**208765**	**208732**
69.1	Legal activities	66105	67863	67410	67048	66859	66319	65759	65453	65338	65000	64959	64502	63970	63518	66626	66442	65917	65716
Sub-Total 69	*Legal and Accounting*	*66105*	*67863*	*67410*	*67048*	*66859*	*66319*	*65759*	*65453*	*65338*	*65000*	*64959*	*64502*	*63970*	*63518*	*66626*	*66442*	*65917*	*65716*
71.11	Architectural activities, engineering activities and related technical consultancy (71.12)	58052	60815	63709	66742	69918	73245	76731	80383	84209	88217	92415	92415	92415	92415	92415	92415	92415	92415
Sub-Total 71	*Architectural and Engineering Activities*	*58052*	*60815*	*63709*	*66742*	*69918*	*73245*	*76731*	*80383*	*84209*	*88217*	*92415*	*92415*	*92415*	*92415*	*92415*	*92415*	*92415*	*92415*
74.2	Photographic activities	10366	10378	10390	10402	10414	10426	10439	10451	10463	10475	10487	10473	10458	10444	10430	10415	10401	10387
Sub-Total 74	*Translation and Interpretation Activities, Certifying Offices*	*10366*	*10378*	*10390*	*10402*	*10414*	*10426*	*10439*	*10451*	*10463*	*10475*	*10487*	*10473*	*10458*	*10444*	*10430*	*10415*	*10401*	*10387*
75	Veterinary activities	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588
Sub-Total 75	*Veterinary Activities*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*	*588*
Section M	**Professional, Scientific and Technical Activities**	**135111**	**139645**	**142097**	**144780**	**147779**	**150579**	**153517**	**156875**	**160598**	**164280**	**168449**	**167978**	**167432**	**166965**	**170059**	**169860**	**169321**	**169106**
79.11	Travel agency activities, tour operator activities (79.12)	1218	1159	1103	1050	1000	952	906	863	821	782	744	744	744	744	744	744	744	744
80.1	Private security activities, Security systems service activities (80.2), combined facilities support activities (81.1)	2489	2616	2751	2892	3040	3196	3360	3533	3714	3905	4106	4106	4106	4106	4106	4106	4106	4106
Sub-Total 77/79/80/81	*Civil Administrative and Support Service Activities*	*3706*	*3775*	*3854*	*3942*	*4040*	*4148*	*4267*	*4396*	*4536*	*4687*	*4850*	*4850*	*4850*	*4850*	*4850*	*4850*	*4850*	*4850*
82.99	Other business support service activities n.e.c. (auctioneres, weighers)	8524	8503	8483	8463	8442	8422	8402	8381	8361	8341	8321	8321	8321	8321	8321	8321	0	8321
Sub- Total 82	*Other Business Support Services*	*8524*	*8503*	*8483*	*8463*	*8442*	*8422*	*8402*	*8381*	*8361*	*8341*	*8321*	*8321*	*8321*	*8321*	*8321*	*8321*	*0*	*8321*
Section N	**Administrative and Support Service Activities**	**12230**	**12279**	**12337**	**12405**	**12482**	**12570**	**12668**	**12777**	**12897**	**13028**	**13171**	**13171**	**13171**	**13171**	**13171**	**13171**	**4850**	**13171**
84.11	General public administration activities	56889	67324	67820	83340	75921	75594	78751	84784	97337	102571	113006	114556	117552	126364	128029	136653	142748	164584

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
84.12	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security, regulation of and contribution to more efficient operation of businesses (84.13)	26666	31906	32121	33760	36898	36688	38071	42194	48044	51745	57688	58712	58034	61380	64689	69139	71546	73359
84.23	Justice and judicial activities	17635	15256	17258	17697	18791	17940	18372	19290	21597	20727	23768	23362	23308	26000	22678	23777	25609	25149
84.24	Public order and safety activities, fire service activities (84.24), compulsory social security activities (84.3)	36871	45310	45623	51169	53774	53773	54296	59149	65441	69591	76126	76165	73842	79537	79860	83357	82660	84053
Sub-Total 84	*Public Administration*	*138061*	*159796*	*162823*	*185966*	*185385*	*183996*	*189490*	*205417*	*232419*	*244633*	*270588*	*272795*	*272736*	*293281*	*295256*	*312926*	*322563*	*347144*
Section O	**Public Administration and Defence / Social Security**	**138061**	**159796**	**162823**	**185966**	**185385**	**183996**	**189490**	**205417**	**232419**	**244633**	**270588**	**272795**	**272736**	**293281**	**295256**	**312926**	**322563**	**347144**
85.1	Pre-primary education, primary education (85.2), general secondary education (85.31), technical and vocational secondary education (85.32), tertiary education (85.42), sports and recreation education (85.51), cultural education (85.52), other education n.e.c. (85.59)	107364	125250	127798	135690	145291	147004	150632	159371	171495	178874	192932	199798	201387	216699	219876	227194	230605	235459
Sub-Total 85	*Education*	*107364*	*125250*	*127798*	*135690*	*145291*	*147004*	*150632*	*159371*	*171495*	*178874*	*192932*	*199798*	*201387*	*216699*	*219876*	*227194*	*230605*	*235459*
Section P	**Education**	**107364**	**125250**	**127798**	**135690**	**145291**	**147004**	**150632**	**159371**	**171495**	**178874**	**192932**	**199798**	**201387**	**216699**	**219876**	**227194**	**230605**	**235459**
86.1	Hospital activities, general medical practice activities (86.31), residential care activities for mental retardation, mental health and substance abuse (87.2), residential care activities for the elderly and disabled (87.3)	31943	34720	35149	36437	37934	37816	38477	39714	41583	42443	44115	44456	45075	46776	46061	47526	48491	50262
86.23	Dental practice activities	3388	3707	4057	4439	4858	5316	5817	6365	6965	7621	8340	8179	8022	7868	7716	7568	7422	7279
87.1	Residential nursing care activities, other residential care activities (87.9)	14267	14355	14444	14533	14622	14713	14803	14895	14987	15079	15172	15554	15945	16346	16757	17179	17611	18054
Sub-Total 86/87/88/89	*Healthcare*	*49598*	*52782*	*53649*	*55409*	*57414*	*57844*	*59097*	*60974*	*63535*	*65144*	*67627*	*68189*	*69042*	*70990*	*70534*	*72272*	*73524*	*75596*
Section Q	**Human Health and Social Work**	**49598**	**52782**	**53649**	**55409**	**57414**	**57844**	**59097**	**60974**	**63535**	**65144**	**67627**	**68189**	**69042**	**70990**	**70534**	**72272**	**73524**	**75596**
90.01	Performing arts, support activities to performing arts (90.02), artistic creation (90.03), operation of arts facilities (90.04)	50297	52557	54930	57421	60037	62783	65668	68698	71880	75223	78735	78438	78142	77848	77555	77264	76974	76685
Sub-Total 90	*Performing Arts*	*50297*	*52557*	*54930*	*57421*	*60037*	*62783*	*65668*	*68698*	*71880*	*75223*	*78735*	*78438*	*78142*	*77848*	*77555*	*77264*	*76974*	*76685*

NACE rev 2 Classification	Description of Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
91.01	Library and archives activities, museums (91.02), pperation of historical sites and buildings and similar visitor attractions (91.03), botanical and zoological gardens and nature reserves activities (91.04)	527	1593	802	921	1126	1110	1141	1205	1305	1413	1485	1504	1488	1589	1649	1834	1785	1916
Sub-Total 91	*Cultural Activities*	*527*	*1593*	*802*	*921*	*1126*	*1110*	*1141*	*1205*	*1305*	*1413*	*1485*	*1504*	*1488*	*1589*	*1649*	*1834*	*1785*	*1916*
92	Gambling and betting activities, operation of sports facilities (93.11), activities of sport clubs (93.12), fitness facilities (93.13), other sports activities (93.19), activities of amusement parks (93.21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	797
93.29	Other amusement and recreation activities (Prostitution)	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653	3653
Sub-Total 92/93	*Sports and Other Recreation*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*3653*	*4451*
Section R	**Arts, Entertainment and Recreation**	**54477**	**57803**	**59385**	**61995**	**64816**	**67547**	**70462**	**73555**	**76838**	**80289**	**83872**	**83595**	**83284**	**83090**	**82857**	**82751**	**82412**	**83052**
94.91	Activities of religious organisations	61422	62024	62619	63260	63802	64414	65033	65657	66287	66923	67566	67353	67142	66931	66720	66510	66301	66093
Sub-Total 94	*Relegious Activities*	*61422*	*62024*	*62619*	*63260*	*63802*	*64414*	*65033*	*65657*	*66287*	*66923*	*67566*	*67353*	*67142*	*66931*	*66720*	*66510*	*66301*	*66093*
Section S	**Other Religious and Professional Organisations**	**61422**	**62024**	**62619**	**63260**	**63802**	**64414**	**65033**	**65657**	**66287**	**66923**	**67566**	**67353**	**67142**	**66931**	**66720**	**66510**	**66301**	**66093**
97	Activities of households as employers of domestic personnel, washing and (dry-)cleaning of textile and fur products (96.01), hairdressing and Men's haircuts (96.02), Funeral and related activities (96.03), Other personal service activities n.e.c. (Shoe Blacks) (96.09)	202929	208326	213866	219553	225391	231385	237539	243855	250340	256998	263832	262748	261668	260592	259521	258455	257392	256335
Sub-Total 96/97	*Personal Services outside the Household, Personal Services*	*202929*	*208326*	*213866*	*219553*	*225391*	*231385*	*237539*	*243855*	*250340*	*256998*	*263832*	*262748*	*261668*	*260592*	*259521*	*258455*	*257392*	*256335*
Section S + T	**Other Personal Services (From Section S) Activities of Households as Employers; Undifferentiated goods and Services-Producing Activities of Households For Own Use**	**202929**	**208326**	**213866**	**219553**	**225391**	**231385**	**237539**	**243855**	**250340**	**256998**	**263832**	**262748**	**261668**	**260592**	**259521**	**258455**	**257392**	**256335**
Total Value Added	***GDP at Factor Prices***	***4725551***	***5119876***	***5436448***	***5876981***	***6017227***	***6208017***	***6237203***	***6009303***	***6490731***	***6411082***	***6554176***	***6749173***	***6949134***	***7129401***	***7520138***	***7008544***	***7522168***	***7416814***

Appendix D: Detailed Methodology of the Agriculture, Fishing and Forestry estimates.

The estimate of agricultural production was the most extensive in terms of industries enumerated. The Gross output of 85 products, placed in 19 categories was estimated for Cyprus; Malta's agricultural series comprises of 42 products in 14 categories.

'Farm gate' price data were problematic for Cyprus; there were just a few reported in the Cypriot agricultural journal[1]. To create the price dataset for the agricultural products for which no farm-gate price data existed, the retail, export and import prices were modified by adjusting the prices downwards based on a trade and transport margin estimate of 25% in GDP, which was based on post-1945 data[2]. Where no price data was found in primary sources, one of two methods was used to calculate the item's price[3]:

1) The price of the item relative to others in the post-war period was assumed to remain constant and representative to its price in 1938[4].
2) A price of a general export category that included the product was considered to be representative to all products within that category. For example modified "other beans" export prices were used as the price of haricot and broad beans[5].

Prices were not problematic in Malta: prices were given along with the volume of production in the annual reports of the department of agriculture[6]. It was possible to use different prices for Malta's important potato export in order to capture the higher value of the early potatoes in the European market. The volume of spring, winter and summer potatoes was disaggregated and multiplied by the relevant price from 1934 onwards; this was not possible for the period 1921-1938 as the volume of early potatoes was unknown.

[1] James, & Koumides, "An Analysis of Farming Costs in Cyprus" Part 2, (1939) pp.45-67; "An Analysis of Farming Costs in Cyprus" Part.3, (1939) pp.87-109

[2] National Archives, Nicosia. File V53/26 "Gross Output and Inputs – Indirect Taxes and Value Added in the Agricultural Sector During the Period 1959 – 1968" Table 6

[3] Such products are: favetta, haricot and broad beans, beetroots, cabbages, vetches, maize, Valencia oranges, bitter oranges, sweet limes and mandarins.

[4] Source: National Archives, Nicosia. File V53/26 "Gross Output and Inputs – Indirect Taxes and Value Added in the Agricultural Sector During the Period 1959 – 1968" Table 8 "Quantity and Value of Seed and Area Sown by Crop 1959-1961"

[5] Source: Percival, D. A. *Cyprus Census of Population and Agriculture 1946* (Nicosia: GPO, 1947)

[6] Source: National Archives, London CO161/118, 120, 121, 122,123, 124 "Annual Report of the Department of Agriculture" 1921-1938

Arable Production

The scope of agricultural products enumerated in Cyprus increased over the estimation period. As a result some agricultural products volume series were not complete for every year. The missing volume was estimated in several ways depending on the amount of circumstantial evidence available.

1) If the yearly yield of the product was enumerated at the Athallassa government farm, then the average acres of that crop sown for the years which the information was complete was multiplied by the Athallassa yield for the missing year.
2) If the government farm did not report the yield the correlation coefficients of the incomplete series were compared with other complete series[7]. For example, the known yearly data for Cypriot cowpeas had a correlation of 0.828 in relation to the complete sesame production series. The average ratio of sesame to cowpeas for the known period of Cypriot cowpeas (1925–1938) was used to extrapolate the production of cowpeas for 1921–1924 based on the production of sesame in 1921–1924 and the average ratio to sesame seeds for 1925–1938, as shown below.

Table A.8: An interpolating example: Cow Peas in Cyprus

Correlation coefficient (Sesame/ Cow peas)1924–1938	0.828937		1921	1922	1923…	…1937	1938
Average production differential: cow peas to sesame 1924 - 1928	1.465766	Volume of cow peas in okes				279,480	285,487
		Volume of sesame in okes	270,572	130,522	234,095	301,638	215,348
		Volume of cow Peas in okes	396,595	191,315	343,129		
		Price of cow peas per oke in 1938	£0.0116	£0.0116	£0.0116	£0.0116	£0.0116
		Gross output in 1938 prices	£4,596	£2,217	£3,976	£3,239	£3,308

Source: Cyprus, *Statistical (Blue) Books*, years 1921–1938; Bevan, *Notes on Agriculture in Cyprus and its Products*, (1919), National Archives, London CO69/38, 40, 42, 43, 45 "Annual Report of the Department of Agriculture" 1921-1938

3) If no correlation was discerned the missing yearly volumes were assumed to be constant at the 5 year average level; this was rare and led to very minimal output being estimated in this

[7] This method was used in the estimation of volumes of Cypriot cowpeas, haricot beans, cotton seed, kolokasi, cabbages, tomatoes, aniseed and for Maltese tomatoes, cotton seed and vetches.

way[8]. For example, flax output in Cyprus during 1921–1923, was assumed to equal the 5 year average for which the information is available from 1924 to 1927.

4) For foraging products only the exports were enumerated as the relation of the exports to the total output was unknown, nut the problem is minimised as output that was not exported was used as intermediate consumption in industrial processes[9].
5) For products that the volume was missing for just one year, the average of the prevailing and following year was used to estimate the missing volume. Similarly, Cypriot grape production volume for the period 1927-1931 was incomplete and the gaps were estimated using log-linear interpolation.
6) For some marginal products such as the production of peas and garlic in Cyprus, only a spot estimate exists for one year. If the share to total agricultural production was small, the production was considered constant throughout the period; but such cases were limited to less than 1% of gross agricultural output in either Cyprus or Malta.
7) For a small range of products, there is evidence of their production, yet it was not possible to estimate output. If such products were exclusively used as fodder crops, such as rye, then an estimation of gross output of rye was not necessary as it was consumed by livestock. For other products such as honey, chickens and eggs, no estimates have been attempted due to the lack of evidence.[10].

For some agricultural products, there were inconsistencies in the reporting method that needed correction. The same volume was reported in different units of measurement in Cyprus. The agricultural reports were given preference over the Statistical (Blue) Books as the most reliable source of information, and all conversions used are available in appendix A. The volumes in the agricultural reports of Malta were not always for the calendar year but for the administrative year running from April to March. These were corrected by the estimates given in the statistical (blue) books which reported data for the calendar year (January to December), and corroborated by using the crop harvest calendar of Malta that that suggested which corps were susceptible to

[8] This method was used for flax in Cyprus and melons in Malta, which constituted less than 1% of agricultural calue added.
[9] This was the case for Cypriot sumach and Maltese cumin.
[10] Some chicken and egg data are included in Christodoulou, D., *Contributions Towards a Development Plan for Cyprus Agriculture* (Nicosia, GPO, 1960); Honey estimates for 1958 are provided by Michaelides, R., *Recent Trends of Agricultural Production and Productivity in Cyprus* (Nicosia: Ministry of agriculture and natural resources, 1970); the evidence was not considered sufficient for volume estimates. There was not data for cucumbers, bananas, asparagus, artichoke and fresh salad herbs

misreporting[11]. Any correction was complicated by the fact that the administrative year changed over time: from 1920 to 1923 the Maltese government offices reported in July, from 1924 to 1934 in September, from 1934 to 1936 in October, and from 1937 to 1938 in November. However, any errors due to the timing of the recorded information are minimized in total GDP since agriculture was a small sector in the Maltese economy.

For some products it was not possible to estimate production in its raw state as primary data was recoding the goods in a semi-processed state, such as tobacco (fumigated or yellow leaf). There was a significant price differential between the two types, but as the yearly volume The volume weights the corresponding yellow leaf and fumigated volume weights in 1938 were assumed constant throughout the period due to lack of further information.

Estimates of perennial crops of Cyprus, such as grapes, apples and oranges are in need of a greater explanation since they were based on much more limited evidence.

Grape production

The production of grapes was particularly significant in Cyprus as it was the main staple product of the mountainous villages of Troodos. Cypriot production remained brisk as it was not affected by a devastating attack of phylloxera that virtually eliminated grape output in Malta. Grapes where the input for numerous other products such as table grapes, grape juice, raisins, red wine, sweet dessert "commandaria" wine, vinegar, local "Zivania" spirit, and brandy. However, there was very limited information on the amount of grapes used in each process.

In order to estimate the value of these grape products, the transformation coefficient of each product in terms of grapes was collected by historical and contemporary sources. The volume and prices of grape products that were exported were available in the Cypriot statistical (blue) books. The exported grape products were converted into grape equivalent volumes, thus estimating the total volume of grapes that were "exported" in the form of grape products. The domestic consumption of grapes was estimated by subtracting the volume of grapes "exported". Thus the implicit assumption is that use of grapes given in the 1938 exports of grape products was indicative of the domestic grape product production. The intermediate consumption and value added of the grape products

[11] Sources: Central Office of Statistics, Malta, *Report on the Census of Agriculture, 1956*, (Valletta: Department of Information and Tourist Services, 1957); Malta, *Statistical (Blue) Book*, years 1921-1938

were estimated on the basis of primary sources supplemented by information given by Mr. Kyprianou[12].

The production of wine production from grapes also produces important by-products whose output is estimated. Spirits and vinegar in Cyprus are made as derivatives of wine and thus they were not assigned a weight in terms of grapes. These products were first transformed into wine and then from wine into grapes. The volumes of zivania (the local spirit), brandy and vinegar produced were estimated as a fixed percentage to the amount of domestically produced/consumed wine, as well as the exported volumes of spirits and vinegar that were known. The results are summarized below.

Table A.9: Wine, Spirit and Table Grape Production in Cyprus.

Product derived from Grapes	Exports 1938 (gallons)	Exports 1938 (okes)	Export weight (not including zivania, brandy and vinegar)	Transformation coefficient	Conversion to wine (gallons)	Conversion to grapes (okes)
Wine	1,234,865		46.3%	1 gallon :4.46 oke grapes		5,509,200
Commandaria wine (sweet dessert wine)	34,678		1.3%	1 gallon :4.46 oke grapes		154,712
Zivania (other spirits)	3,778			1 gallon: 4 gallons of wine	15,112	67,420
Brandy	5,439			1 gallon: 4.5 gallons of wine	24,476	109,194
Vinegar	137,819			1 gallon: 1 gallon of Vinegar	137,819	614,863
Grape juice	125,998		3.1%	1 gallon: 2.97 okes of grapes		374,750
Table grapes		912,640	7.7%	1 oke: 1 oke of grapes		912,640
Currants and sultanas		1,799,600	41.6%	1 oke: 2.75 okes of grapes		4,948,900
Total	**1,542,577**	**2,712,240**	**100%**		**177,407**	**12,691,679**

Source: Cyprus, *Statistical (Blue) Book for the Year 1946* (Nicosia: GPO, 1947); Interview with Mr. P. Kanaris, Cyprus Wine Products Commission 18 Dec 2006; Interview with Mr. G. Kyprianou; see footnote 12; Republic of Cyprus, *Report on Marketing of Vine products* (Nicosia: GPO, 1956) p.6

In 1938 the grape products exported consumed 12,691,679 okes out of 51,000,000 okes. Thus 38,308,321 okes of grapes were available for transformation in several grape products. The export weights were assumed to be representative of domestic production in order to estimate the volume of locally consumed grape products. The domestic consumption of Zivania, brandy and vinegar was

[12] Interview with Mr. Kyprianou, G., former secretary of the Agros Village Co-operative in the 1930s, and owner of a traditional wine still.

estimated as a proportion of the domestic vine process. It was assumed that 0.5% of wine for domestic consumption was transformed to spirits, as well as a further 10% of domestic wine was converted to vinegar[13]. Thus in 1938 3,727 gallons of Zivania, 1,104 gallons of brandy, 397,519 gallons of vinegar and 3,557,798 gallons of wine were produced and consumed domestically. Their value added in Cyprus pounds was estimated at: Zivania £322, Brandy £144, Vinegar £8,019, Wine £153,969.

The above was cheeked for plausibility. Firstly the estimates also correspond very closely to the independent estimates of raisins, grapes, and wine given in the annual reports of the department of agriculture for the period 1921-1925. The second test was to see if the grape products had a higher value added of unprocessed grapes. The estimation of grape products is by 18% higher than if one took the value added of grapes only. The estimates were also checked using the Cypriot input-output tables for 1954 and 1957. The percentage of the exports of grapes to total grape output was compared to the estimates for 1938[14]. Grape products in 1954 and 1957 represented 7.1% and 7.2% of gross agricultural output; the grape products in 1938 represented 17.7% of the gross output, which is very plausible considering the rapid increase of agriculture since 1945 due to the expansion of the citrus producing areas. Thus the result is plausible when compared to interwar juxtapositions and more accurate post-Second World War statistics.

Table A.10: Production of Grape Products in Cyprus

Product derived from Grapes	Assigned local use of grapes (okes)	Exported use of grapes (okes)	Total grape use	Imputed factor price: oke of grapes	Value of grape products
Other wines	17,734,842	5,509,200	23,244,042	£0.00970023	£225,473
Commandaria	498,037	154,712	652,749	£0.01798601	£11,740
Currants and sultanas	15,931,163	4,948,900	20,880,063	£0.00439310	£91,728
Table grapes	2,937,909	912,640	3,850,549	£0.00629961	£24,257
Grape juice	1,206,369	374,750	1,581,119	£0.01308073	£20,682
Brandy		109,194	109,194		
Zivania (other spirits)		67,420	67,420		
Vinegar		614,863	614,863		
Total	38,308,321	12,691,679	51,000,000	£0.00629419	£321,004
Total Value (inclusive of vinegar, brandy and zivania exports)					£380,284
Ratio of Total Uses Value to total Grape Value					1.18

Source: Table A.9; Cyprus, *Statistical (Blue) Book 1938* (Nicosia: GPO, 1939); Percival, *Census of Population and Agriculture 1946* (1947) Cyprus. *Statistical (Blue) Book 1946* (Nicosia: GPO, 1947).

[13] It is assumed that spirits are produced to the ratio of 75% zivania and 25% brandy
[14] Vassiliou, *Input–Output Analysis of the Economy of Cyprus* (1959)

The estimates of grape products were also compared with estimates of other Mediterranean countries. Prados de la Escosura estimated that the proportion of grape output to total agricultural final output in Spain for the period 1929-1933 was 6.3%, which is much less than in the case of Cyprus[15]. However Spain has a diverse geography that led to the output of grapes being less important to the total economy than in Cyprus. Greece is more similar to Cyprus in terms of geography, and grape products were a vital to its economy in the 19th and 20th century[16]. Kostellenos calculated the share or wine, grapes and currants is 15.2% of the agricultural value added in 1938, a share that is close to the share Cypriot economy in 1938[17].

A fourth of plausibility was based on the consumption of wine in Cyprus. The daily consumption estimate for alcohol in rural villages was estimated based on the rural survey[18]. Surridge provides information on the proportion of persons who drink per community (which is 82% of all Christians and 40% of all Muslims) in the villages surveyed. The population of Cyprus in 1931 over the age of 14 was divided in their respective religious affiliation. Then an estimate of the consumption of wine was estimated on the survey, which records a daily expenditure of wine of ½ to ¾ piastres. The yearly expenditure in 1929 was estimated and deflated to 1938 constant prices based on the price of wine. The value of the alcohol consumption in 1929, in constant, 1938 prices, had a lower bound of £128,922 and an upper bound of £193,384. The total alcohol production of for domestic use in 1929 was estimated as £174,439. It is encouraging that the estimates for alcohol production in within the bands despite being estimated by different sources.

Citrus estimates

Cypriot citrus production data is much more limited than for grapes. The estimates of citrus production in 1927 and 1928 were provided in the annual reports of the agricultural department and presented in Table A.11, but no clue was given on the estimation method. Thus citrus production was based on other sources particularly on irrigation, using the estimates below as a check.

[15] Prados de la Escosoura, Leandro, *El Progresso Económico de España (1850–2000)* (Bilbao: Foundation BBVA, 2003) p.52 Table 2.2

[16] Kostas, K. & Petmetzas, S. (eds.) *Η Ανάπτυξη της Ελληνικής Οικονομίας κατα το 19ο Αιώνα 1830 – 1914 [The growth of the Greek Economy During the 19th Century]* (Athens: Alexandria, 2006) pp.154-157

[17] Kostelenos, *Money and Output in modern Greece* (1995) p.75, Table A.

[18] Surridge, *A Survey of Rural Life...* (1930) p.22

Table A.11: Citrus enumerated in the Cypriot department of agriculture

	Type of Citrus	1926	1927
Number of Citrus produced	Oranges	29,637,440	28,000,000
	Lemons	16,417,870	N/A
	Mandarins	4,511,870	N/A
Number of Citrus Exported	Oranges	14,275,459	20,774,568
	Lemons	1,391,760	
Percentage of citrus production exported	Oranges	48.2%	74.1%
	Lemons	8.5%	
	Mandarins		
Estimated citrus value in 1938 factor prices	Oranges	£33,227	£31,391
	Lemons	£12,275	
	Mandarins	£2,915	
Total citrus value in 1938 prices	**All citrus**	**£48,417**	**£31,391**

Source: National Archives, London. File: CO69/38 "*Cyprus Annual Reports of the Department of Agriculture* 1927/1928"

In 1946 there were two estimates of citrus volumes based on different methodologies: a survey of production was undertaken and reported in the statistical (blue) book of 1946 and a census of agriculture based on returns provided to farm holders. Despite the differing data sources the difference of volume estimated in the two methods was very small[19]. The statistical (blue) book and the agricultural census provide enough information to estimate yields per acre and per tree for oranges, Valencia oranges, bitter oranges, lemons, sweet lemons and grapefruit. By estimating the yield of citrus trees per acre it was clear that all citrus plantations in 1946 were situated at perennially irrigated areas: the estimated acres of citrus cultivation in the statistical (blue) book of 1946 is just 0.08% smaller than the stated perennially irrigated area under citrus cultivation in the 1946 census.

An assumption was made that during the period 1921–1946 the perennially irrigated area increased, but the product mix planted on irrigated areas remained unchanged. This is not so unreasonable since the perennially irrigated area was mostly trees; citrus trees need time from when they are planted to become productive. As a result a change in the tree composition under irrigation would change only slowly. Therefore it was assumed the same proportion of the irrigated area was producing citrus products in 1931 as in 1946. Citrus cultivation is assumed to be 17% of the perennially irrigated area of 1931 based in the 1946 data. If one assumes that the fruit yields of 1946 are representative for 1931 then an estimate of the citrus in 1931 was possible[20]. The perennially irrigated area in 1931 was 68,749 donums; the assumed area under citrus cultivation

[19] The estimation of output and number of trees are slightly different between the Blue Book and the 1946 Census (0.7%). The Blue Book results are based on a survey of an area under cultivation while the Census results are based on questionnaires given to agricultural producers. Source: Percival, *Census... 1946* (1947) and Cyprus, *Statistical (Blue) Book... 1946* (1947)

[20] Hart-Davis, *Report... Census of 1931* (1932) and Percival, *Census... 1946* (1947)

(17%) was estimated at 11,687 donums, equivalent to 3,863 acres. Assuming that there were 194 trees per acre (as was the case in the 1946 census), the total number of citrus trees in 1931 was estimated at 749,422[21]. The estimated trees for 1931 can be separated into their type of citrus by using the 1946 composition of trees as weights, leading to the volume and value of citrus production in 1931 as shown below. The growth of trees from 1931 to 1946 was annualised at 3.35% and used to extrapolate yearly output estimates.

Table A.12: Citrus Production in Cyprus

Type of Citrus Tree	1931	1946	Citrus Production 1946	Yield of Citrus products in 1946 (no. per tree)	Estimated Production in 1931	Price of Citrus 1938 (£ per fruit)	Value of Citrus Production (constant 1938 prices)
Oranges	544,209	892,677	87,945,000	99	53,614,533	£0.00112	£60,107
Valencia Oranges	20,155	33,061	2,258,000	68	1,376,546	£0.00112	£1,543
Grapefruit	36,327	59,588	6,116,000	103	3,728,535	£0.00278	£10,352
Bitter Oranges	20,634	33,847	2,045,000	60	1,246,684	£0.00112	£1,398
Mandarins	23,675	38,835	2,045,000	53	1,246,694	£0.000646	£805
Sour Lemons	100,149	164,277	34,400,000	209	20,971,442	£0.000748	£15,679
Sweet Limes	4,273	7,008	637,000	91	388,399	£0.000748	£290
Total	**749,422**	**1,229,293**	**135,446,000**		**82,572,834**	**£0.00828**	**£90,175**

Source: Hart-Davis, *Report... Census of 1931* (1932) and Percival, *Census... 1946* (1947)

Such a method creates almost as many problems as it solves. The current estimates shown in Table A.12 are much higher than those of Table A.11: even by removing the products not enumerated in 1927 the output of oranges is higher than in Table A.11. However, the department of agriculture did argue that the spot estimates in Table A.11 were speculative rather than definitive. The number of trees indicates that output for 1931 could be an underestimate; there was a 39% increase in citrus trees from 1932 to 1946[22].

The estimate is unsatisfactory but the best possible with current data availability[23]. Yet its problems have to be noted: the growth of irrigation might not have grown at a smooth annual rate, the share of citrus trees in the irrigated area could have been less in 1931, the number of trees per acre and the

[21] The current density of orange trees per acre is anything from 80–1000 trees per acre.
[22] Source: Percival, *Census of Population and Agriculture 1946* (1947)
[23] Published sources on irrigation are not helpful in providing additional estimates on irrigation and the product mix of irrigated lands: Ellis, W.M., *Report on Improving irrigation works in Cyprus* (Nicosia: GPO, 1922); Raeburn, C. *water Supply in Cyprus: A general report (2nd ed.)* (Nicosia: GPO, 1945)

yield per tree might have been lower in 1931 than in 1946, the product mix of citrus might have been different in 1921 and the majority of citrus expansion could have occurred in the period 1939-1946; all these could change the output of the 1931 benchmark. In addition the estimates follow a constant annual growth rate; this is unrepresentative of the yearly variability in agricultural production. Further research is necessary to understand the interaction of available and rain and their impact to the yield of citrus trees. Pitcairn estimated the irrigated area under citrus in 1935 as 11700, just 13 donums higher than the 1931 census estimate, possibly indicating a much slower growth of acreage under irrigation before 1935[24]. However it is probable that Pitcairn was just quoting the 1931 irrigation area census as the most up to date figure in 1935.

Pome Fruit (fruits with a stone inside) and Nuts

The estimate for citrus trees in 1931 allowed an estimate of other pome fruit and nuts to be based on the number of fruit and nut trees not devoted to citrus production. The 1931 census provides the number of trees, without including olives, carob, mulberry or pomegranate trees[25]. By subtracting the estimated number of citrus trees in 1931 and using the 1946 weights of trees as reported in the census, the remaining "other fruit trees" of 1931 can be allocated other fruit and nut trees. The numbers of trees in 1931 are weighted based on their 1946 enumeration, their yield assumed identical to their 1946 yield. This estimation procedure is unsatisfactory as it compounds to the problems of citrus fruit production mentioned above[26]. There is not sufficient information for pomegranate or mulberry production for period 1921 – 1938, other than exported pomegranates and pomegranate rinds, used in the eastern Mediterranean for the production of black dye[27].

[24] Pitcairn, A., "Irrigation of Cyprus" *Cyprus Agricultural Journal*, p.43

[25] Percival states that "No definition is given in the 1931 census of the 'other trees,' but from an examination by villages they appear to comprise citrus, deciduous fruit and nuts, but not mulberries and pomegranates". Percival, D. A. *Census of Population and Agriculture 1946* (1947) p.73.

[26] Such concerns are more pronounced than the citrus estimate: the other fruit estimate has a very high annual growth rate of 9.65% and is based on the created estimate of citrus trees. Fresh fig prices were created based on the price differential of exported fresh and dried apricots and applying it to dried fig prices.

[27] Cyprus, *Annual Report of the Agricultural Department for the Year 1929* (Nicosia: GPO, 1930)

Table A.13: Estimation of Pome fruits and Nuts in Cyprus

	Yield per tree in 1946 (okes per tree)	Tree weight to total Fruit and Nut trees in 1946	Estimated Trees in 1931 (no.)	Estimated Production (okes)	Price 1938 (£ per oke)	Value of Fruit and Nuts in 1931 (£, 1938 prices)
Apples	5.93	0.0654	22,364	132,713	£0.0174	2,308
Pears	3.63	0.0188	6,428	23,367	£0.00938	219
Peaches	6.19	0.0130	4,440	27,487	£0.0124	341
Apricots	8.17	0.0514	17,574	143,517	£0.0119	1,708
Cherries	4.74	0.0202	6,887	32,613	£0.0335	1,094
Plums	8.24	0.0197	6,745	55,578	£0.00731	406
Figs	18.26	0.0940	32,111	586,355	£0.00598	3,509
Almonds	0.95	0.668	228,564	217,386	£0.0276	5,994
Walnuts	0.90	0.0139	4,760	4,284*	£0.0382*	163
Hazelnuts	2.07	0.0345	11,777	24,422	£0.0382	932
Other nuts	0.95	0.000165	57	54*	£0.0340	2
Total	**-**		**341,709**	**1,247,777**		**16,676**

*Walnut estimates were given in number rather than weight: it is assumed that 433 hazelnuts equal 0.9 okes; the price of walnuts is assumed to equal the price of hazelnuts. The yield of other nuts was considered similar to almonds. Source: Hart-Davis, *Report... Census of 1931* (932) and Percival, *Census of... 1946* (1947)

Carobs

Carobs were the most important agricultural export of Cyprus; the major merchant families of the time were all involved in its trade[28]. The majority of the crop was exported; what was not exported was mainly consumed by livestock as fodder and thus not included in the value added estimates. Estimates of carob production were based on an export duty data. As the export prices for Cyprus are "f.o.b" prices (fee on board), the value of the export duty was removed prior to the calculation of the imputed price for carobs[29].

Animal Production

Estimating the volume and output of animal products was fraught with difficulty. This is because animals are both the unit of production but it can also be transformed into product. The main source of information was the statistical (blue) books; they provide information on the annual (sometimes bi-annual) stock of animals is Cyprus and Malta[30]. Data was quite reliable since there was a tax on sheep, goats and pigs thus providing an incentive for the government to measure their number accurately. However such data by itself was insufficient for estimating the output of meat, skin and wool since the most of the animals slaughtered for their meat were under a year's old[31]. Thus the method needed to take into account the meat and skin produced the young animals who were born

[28] Κουδουνάρης, Α.Λ. *Βιογραφικόν Λεξικόν Κυπρίων1800-1920* [Biographical Dictionary of Cypriots] (Λευκωσία: Ίδρυμα Πιερίδη, 1989) p.32

[29] The export tax was as high as £0.22 Cyprus pounds per Aleppo cantar in 1938.

[30] The Cyprus blue books enumerated camels horses, donkeys, mules, oxen, sheep, goats and pigs. Malta did not enumerate camels.

[31] Percival, D. A. *Census of Population and Agriculture 1946* (Nicosia: GPO, 1947?) p.82

and slaughtered before being enumerated in the livestock census. Eggs, poultry, rabbit and honey were not estimated. The nature of the sources sometimes allowed for a direct enumerated of output, but more often than not it was necessary to build models to produced plausible estimates of production on circumstantial sources by adapting the methodology used by Kostellenos *et al.,* for estimating animal products in Greece[32].

Estimating Meat, Milk and Wool

The data sources used for the estimation of animal products in Cyprus and Malta were not compatible. Primary sources on annual animal slaughtering were available in Malta[33]. Due to the small surface area of Malta and Gozo and the urbanized nature of the Maltese archipelago, the slaughter of animals took place in the government slaughter houses in Malta and Gozo. These slaughterhouses published an annual report, providing data of the number of animals killed and the total volume and value of meat produced. The model constructed for Cyprus, as shown below, was used for Malta only to estimate milk and wool production by using of the information provided in the Cyprus agricultural journal on product yield of Maltese sheep and goats.

Cypriot data on meat production was limited to some of the urban areas of Cyprus for a short span of years. Due to the incomplete nature of the data and possible differences between the propensity of meat consumption between the minority urban and the majority rural population, it was decided to build an alternate model of meat production based on alternative sources, and relegate the limited evidence of slaughtering as a plausibility test.

The Cyprus meat estimates were based on agricultural studies published during the period, published in the quarterly journal of the department of Agriculture[34]. Where more information was needed, post-Second World War sources were consulted and combined information on the Greek case in Kostellenos *et al.*[35]. A numerical representation of the method is available below.

[32] Γεώργιος Κωστελένος, *et al*, *Ακαθάριστο Εγχώριο Προϊόν* (2007), pp.47 - 58
[33] National Archives, London. File: CO161/118, 120, 121, 122, 123. 1924, 125 "Annual Report of the Public Health and Veterinary Department"
[34] The Cyprus Agricultural Journal (which was also known before 1918 as the Cyprus Journal) was published quarterly by the department of agriculture.
[35] Γεώργιος Κωστελένος, *et al*, *Ακαθάριστο Εγχώριο Προϊόν* (2007), pp.47 - 58

Table A.14: Animal production model.

No. of Equation	Explanation	Notation	Source:
(1)	Number of animals year t	Y_t	Blue Books (1921-1938)
(2)	Number of animals year t -1	Y_{t-1}	Blue Books (1921-1938)
(3)	Gross increase / decrease	$I = Y_t - Y_{t-1}$	(3) = (1) – (2)
(4)	Ratio of males to total flock	r_m	Republic of Cyprus, *Agricultural Census* (1978), Bevan (1918), Kostellenos *et al* (2007)
(5)	Number of males year t-1	$M = r_m Y_{t-1}$	(5) = (2) * (4)
(6)	Number of females year t-1	$F = (1 - r_m) Y_{t-1}$	(6) = (2) * (1 – (4))
(7)	Reproduction coefficient	α	Maule & Shevki (1935), Maule (1938), Constantinou (1981)
(8)	Lambs / kids born	$\Lambda = \alpha F$	(8) = (7) * (6)
(9)	Natural Deaths / Disease / Culling	Θ	Maule & Shevki (1935), Gambles (1936)
(10)	Number of lost animals during Yt	$D = Y_{t-1}\theta$	(10) = (2) * (9)
(11)	Net exports Y_t	X_t	Blue Books (1921 – 1938)
(12)	Number of lambs / kids needed for Y_t and net exports X_t	$E = I + D + X_t$	(12) = (3) + (10) + (11)
(13)	Number of lambs / kids consumed	$A = \Lambda - E$	(13) = (8) – (12)
(14)	Number of adult animals consumed	$B = \frac{D}{2}$	Maule & Shevki (1935)
(15)	No. animals consumed	$C = A + B$	(15) = (13) + (14)
(16)	Adult, meat per carcass (kg)	μ_a	Kostelenos *et al.*, (2007)
(17)	Lamb / kid, meat per carcass (kg)	μ_y	Kostelenos *et al.*, (2007)
(18)	**Total meat produced**	$Total\ Meat = \mu_y A + \mu_a B$	**(18) = [(13) * (17)] + [(14) * (16)]**
(19)	Wool per surviving adult male (kg.)	w_m	Maule & Shevki (1935)
(20)	Wool per surviving adult female (kg.)	w_f	Maule & Shevki (1935)
(21)	**Total wool produced**	$Total\ Wool = [w_f(Y_t - E)](1 - r_m) + w_m(Y_t - E)]$	**(21) = [[(1) – (12)] * [[1 – (4)] *(20)]] + [[(1) – (12)] *(4)] * (19)]**
(22)	Adult hide weight per slaughtered animal (kg.)	H_a	Kostelenos *et al.*, (2007)
(23)	Lamb / kid hide per slaughtered animal (kg.)	H_y	Kostelenos *et al.*, (2007)
(24)	**Total hides produced**	$Total\ Hides = H_a B + H_y A$	**(24) = [(14)* (22)] + [(13)*(23)]**
(25)	Milk per surviving female adult (ltr.)	γ_f	*Government Farm Reports. Cyprus Agricultural Journal* (1932 - 1938), Kostelenos *et al.*, (2007)
(26)	**Total milk produced**	$Total\ Milk = \gamma_f [Y_t - [E(1 - r_m)]]$	**(26) = [(1) –[(12) * (1 – 4)]] *(25)]**

Sheep and goat products were based on the yearly enumeration of livestock, which enumerated every animal over one year old. The annual rate of change of animals was combined with the net exports of sheep and goats to estimate the yearly increase/decrease of the stock. Using evidence from historical and contemporary sources the ratio of males to females in the flock was estimated. The reproduction coefficient was based on sources of animal births, animal infant mortality and miscarriages; Cypriot sources suggested the need for a more conservative estimate of total births than in Kostellenos *et al.*[36]. This coefficient was multiplied with the females of the previous year (y_{t-1}), thus estimating the total number of young lambs/kids born in year t. The aggregate flock of animals was assigned a constant coefficient of death by disease, old age and culling. By adding the number of animals that died to the difference between the animals in year t in relation to year t-1 and the net exports of animals of the species, the number of lambs/kids maintained to make up the flock in year t was estimated. It was assumed that the remaining births were fed only until they reached a certain weight and where then killed for their meat and skin before the next enumeration of livestock. Constant volume transformation coefficients were assigned to slaughtered adults and young to estimate the production of meat and skin. Milk production was estimated based by a constant transformation coefficient based on the female animals older than a year. The model is quite successful, as in no year did the new animals born proved to be insufficient to cover the shortfall in population and provide surpluses for exports and meat.

The estimation of beef was separated from the estimation of cow's milk. The herd of milk cows and the production of milk extrapolated backwards using post-Second World War data. Beef and cattle skin were estimated in a similar way to sheep and goats. Pig production was not estimated in the same way due to the stock enumeration not differentiating between adult and young pigs; this is important as pigs bred over an 18 month cycle, leading to the model reaching implausible results. Instead it was assumed that since pork was reared for fat a constant breeding stock was kept and this piglet births were assumed constant. It was further assumed, based on Cypriot evidence that a quarter of the adult population of pigs would die or be killed each year and piglets were assumed to fill the gap of the enumerated population in year t. Any piglets remaining are assumed to be processed into meat. It is regrettable that the production of lard could not be estimated separately due to lack of data over the proportion of lard in the slaughtered meat of Cypriot pigs.

[36] Sources: Maule, J P, "The Breeding and Management of Sheep in Cyprus", *The Cyprus Agricultural Journal*, December, Part 4, Vol. XXX (1935) p.88; "The Milk Yield of the Maltese and Native Goats", *The Cyprus Agricultural Journal*, December, Part 4, Vol. XXXIII (1938); Constantinou, A, *Ruminant Livestock Genetic Resources in Cyprus*, (unpublished, 1981)

Although the model is a good method in estimating output, it is not as responsive to a sudden reduction of available fodder, and thus it may overestimate output in years of fodder scarcity. This is because the model assumes that births, deaths, the ratio of females of the flock and the amount of meat extracted are constant over the time period. Yet during period of drought most of these variables which are assumed constant are significantly away from the norm value. During drought there is a high prevalence of disease, while the wastage of the animals reduces meat and milk production[37]. During the Cypriot drought of 1931-1933 the production of meat declined: even though more animals are sent for slaughter by the farmers the emaciated animals gave a much lower meat yield[38]. The model does not take into account variables such as fodder availability, demand, weather, husbandry, nutrition, animal hygiene or the change of tastes of the consumer. If the animal hygiene is improved the constant transformation coefficients will underestimate production as may be fatter prior to slaughter.

However, contemporary evidence seems to suggest that, the model is providing accurate results. The estimation of goat flesh might be overestimated in Malta, since contemporaries mention goats being kept for their milk and not for their flesh, which the British observer considered as not palatable[39]. However, the source was written from the standpoint of a British colonial officer and thus it may not reflect the eating habits of the Maltese. The statistical (blue) books of Cyprus or Malta did not record the price of goat meat but personal interviews suggest otherwise[40].

Cypriot meat production in 1938 is similar to output in 1946, despite the two estimates using different sources. The census states that the average annual slaughter was of 80,000 adult sheep and goats and 250,000 lambs and kids in the early 1940s[41]. The war did not allow for the increase of flocks, due to the decrease of available fodder as land was used for the more remunerative grains and imported fodder was prevented from arriving to the island[42]. The model's results for 1938 were similar: 76,507 adult beasts and 232,825 lambs and kids were slaughtered for meat. In addition the 1938 estimate and the 1946 census also produce similar results in terms of flock composition. Flock

[37] "Introduction", *The Cyprus Agricultural Journal*, volume XXVIII, Part.1 (1933); for a discussion of the effects of drought on the cattle trade please see: Le Nay, Jean & Mathis, Jean , "The Impact of Drought on the National Accounts for Livestock in Sahelian Countries", *Income and Wealth,* Series 35, No.2 pp. 209 - 224

[38] "Introduction", *The Cyprus Agricultural Journal*, volume XXVII, Part.1 (1932); "Introduction", *The Cyprus Agricultural Journal*, volume XXVII, Part.2 (1932);

[39] Grieve, N.S., *Preliminary Report on an Agricultural Survey of Malta and Gozo with Specific Reference to Increased Food Production During War-time,* (Malta: GPO, 1942) p.4

[40] Interview with Mr. A., Polydorou, 27 Dec. 2006; Interview with Mr. G. Kyprianou, 18th of July 2008.

[41] Percival, *Census... 1946* (1947), p.82

[42] Source: National Archive, Cyprus. File: Statistical (Blue) Book, 1994, (Unpublished).

composition is important since in the model it determines the fertility the total flock, but these shares were estimated independently from the census. The ratio of males to the total adult population were estimated in 1938 as 0.04 for sheep and 0.065 for goats[43]. The 1946 census ratios were 0.032 and 0.071 respectively. The proportions of young animals as a proportion of the flock, which provide the replacement ratio of the flock, are also very similar, despite being constructed from different sources. In 1946 young animals represented 20% of sheep and goats while the 1938 estimate has the ratio as 21.6%. Using the model to estimate the output of Cypriot meat production in 1946 led to very similar results to the 1946 census, with output being smaller by less than 3%. The fact that the 1938 estimate is similar while using different sources of information than the 1946 census adds validity to the estimates.

The estimates of Cypriot animal production were also checked with the limited data on municipal slaughter houses. In 1933 the colonial government initiated mandatory inspections, under guidance from the veterinary service, of the municipal slaughterhouses of the four largest cities: Nicosia, Larnaca, Limassol and Famagusta[44]. These four cities contained approximately 17.4% of the total population[45]. Data on the yearly slaughter of cattle, sheep and lambs, goat and kids and the total volume and value of meat is available from 1933 to 1938.

The upper bound of domestic meat consumption was estimated by expanding the volume production of meat to the population as a whole, as cities were wealthier and could afford more meat. The slaughterhouse extrapolation for the whole population can be considered as an estimate maximum, since the slaughter houses served wealthy urban areas the consumption of meat was less in the rural areas. The average per capita production of meat for the period was assumed to be constant, and then was combined with the yearly estimates of population.

[43] The constant ratio for cattle is not included as it was calculated based on the 1946 census.
[44] National Archives, London. Files: CO69/45 "Annual report of the director of agriculture for the year 1938*"* p.24
[45] The same inspectors estimated that the population served in the cities totalled 69000 and the instercensal population estimate for 1938 was 307302.

Table A.15: Alternative estimates of Animal Production

Title	Estimated Animals Slaughtered 1938 (1)	Enumerated Animals Slaughtered in urban area (17.37% of total Population) (2)	Estimated Animals based on expanding results of urban area (100% of population) (3)	Difference of estimated and urban area extrapolation (1) – (3)
Sheep and Lambs Slaughtered	166,738	67,676	389,614	-222,876
Goat and Kids Slaughtered	142,595	19,222	110,662	31,933
Oxen Slaughtered	33,062	2,091	12,038	21,024
Pigs	29,134	3,420	19,689	9,445
Total Number of Animals Slaughtered	371,529	92,409	532,003	-160,474
Total Volume of meat (kg.)	4,629,548	1,552,977	8,940,571	-4,311,023
Volume of meat per capita	11.65	22.5	22.5	-10.65
Value of Meat (£)	293,181	102,096	587,772	-294,591

Source: Table A.14; Cyprus, *Annual Report of the Director of Agriculture for the year 1938* (Nicosia: GPO, 1939) p.24.

The returns indicate that the model estimates are within the upper bound of meat consumption: the number of both animals being killed and the meat that is extracted out of each animal was far higher in the slaughterhouses. In addition the implied weights of the slaughterhouses are substantially more than the weights recoded in the Cypriot agricultural journal and the Greek animals in Kostellenos *et al.*[46]. The meat estimated using the slaughter house method is far too high with a per capita consumption of 22kg. In addition, the model estimate is based on producer and not market prices. As a result, the animal slaughter value is double the model estimate for 1938. The large discrepancy is due to that fact that municipal slaughter houses dealt with a much wider section of the demand for meat than just the urban population. In Malta almost all slaughtering took place in two government slaughterhouses; thus it is likely that in Cyprus the villages would also bring the animals for butchery in the municipal slaughter houses. Thus the share of the population of the cities with municipal slaughterhouses is not representative to the amount of livestock slaughtered there[47]. The model is preferred to the use of the slaughterhouse data.

[46] Kostelenos *et al.*, *Ακαθάριστο Εγχώριο Προιόν* (2007) pp.47 - 58

[47] A serious weakness of the slaughterhouse method of estimations is that meat production is linked to the intercencal yearly growth of population and not with the stock of animals available for meat consumption. Thus even if livestock is completely decimated in a certain year the estimate will continue to show a rising trend of meat production; thus meat production has no relation with its input (of animals to be slaughtered).

Net Increase in Livestock

The estimate of net increase in livestock, was estimated for both islands based on yearly enumerations of livestock, and the annual statistics of import and exports in the statistical (blue) book. For the period 1930–1938 there was only a bi-annual survey of horses, donkeys, oxen, mules and camels for Cyprus. Goats and sheep under a year at the time of enumeration and pigs younger than 3 months were not included in the enumeration[48]. The bi-annual change was evenly divided into the respective years in order to estimate the annual change of livestock production.

Ancillary Production to Agriculture

Ancillary Production on farm was calculated using direct volumes recorded by the blue books; thus Cyprus has estimates of butter and Halloumi (a Cypriot cheese), while Malta has estimates of sausage production in the veterinary department's annual report[49]. Derivative grape products described above were also included in ancillary production to agriculture.

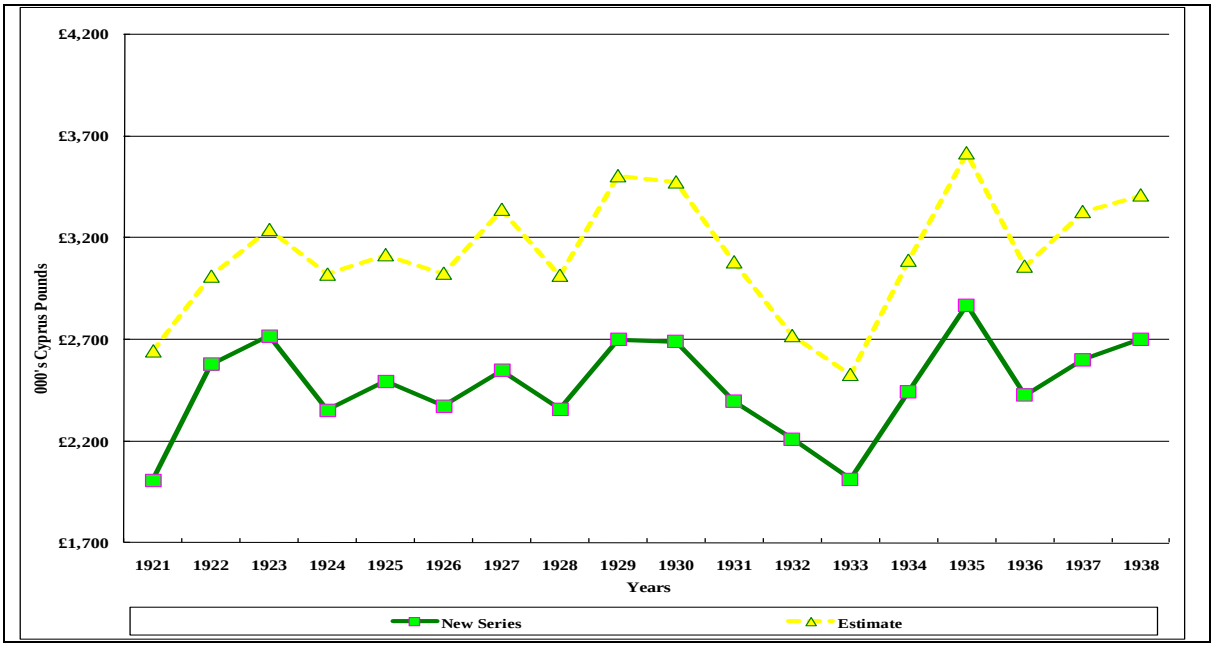
Robustness of agricultural estimates

It is a widely held view that one of the most significant problems in comparing historical national accounts is between differing methods used in estimating gross output. In order to evaluate the effect of the methodology described above, a second series of gross output was constructed where assumptions were kept to a minimum. This was estimated using the agricultural product of Cyprus since it was the series that was constructed using the most assumptions. The new series was based on only crop series for which data for the period 1921 – 1938 was complete and the animal production, which was estimated indirectly. Animal production was checked for plausibility separately and is described below. These new series represented 73% of the originally estimated value in 1938. Missing values were completed by assuming that the rate of growth the 73% was representative of the remaining 27% that was not estimated. Thus, this procedure eliminates the assumptions made in estimating citrus and grape products.

The results are positive as the additional assumptions do not significantly alter the growth of GDP. The differences in the gross output are relatively small. The largest difference in gross output between the series is in 1922 Yet, with the exception of 1921, 1922, 1923 and 1927 the differential between the two series is less than ±2%.

[48] National Archives, London. File: CO69/40 "Annual Report of the Director of Agriculture for the year 1929"
[49] National Archives, London. File: CO161/118, 120, 121, 122, 1923. 1924, 125 "Annual report of the Public Health and Veterinary Department"

Figure A.1: Comparing agriculture estimates with series of minimal assumptions



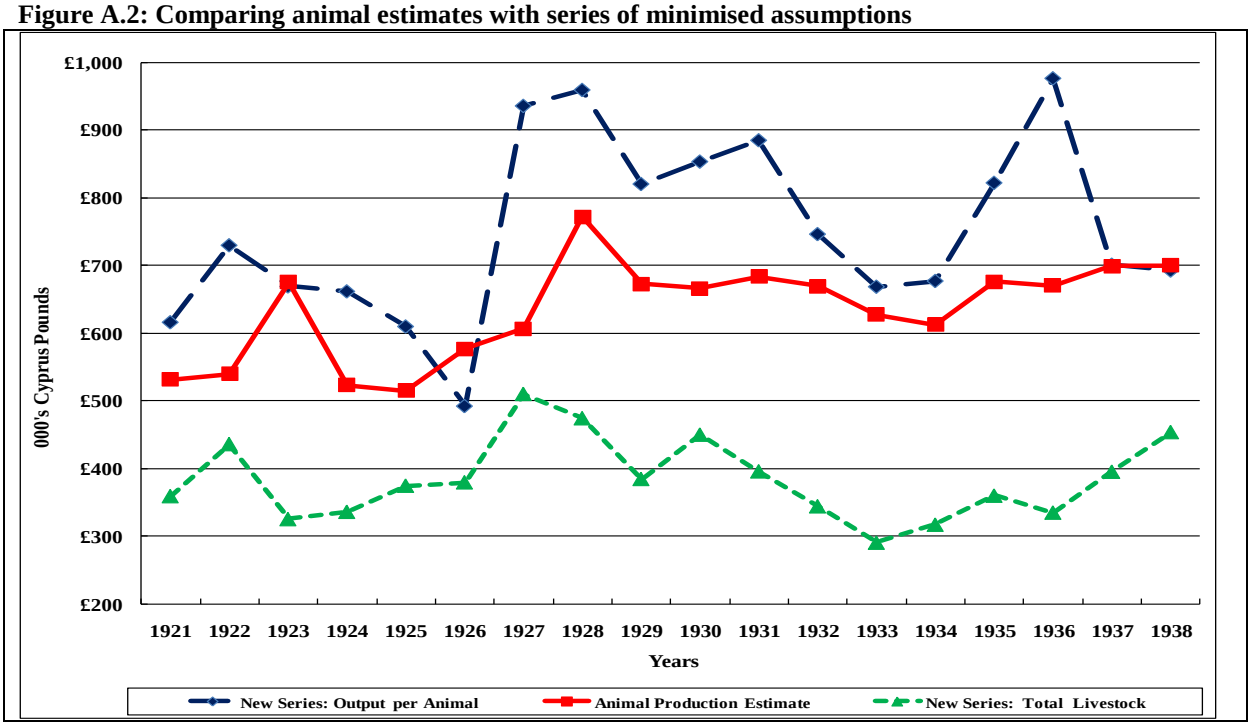
Source: Statistical (Blue) Book; Own calculations, Chapter 4, Figure 4.1

The animal production model is preferred to other estimation methods since it better captures the cycles of animal production mentioned in the literature. However alternative methods to estimate animal production have been used in HNA construction; these methods require less research but can operate under few assumptions. A new series was constructed by estimating the value of meat, skin, wool and milk in 1938 and divided by the number of animals in 1938 to calculate evaluate the transformation coefficient of meat per animal for the benchmark year. Then the numbers of animals in year were multiplied by the transformation coefficients for meat, milk, wool and skin. The net change in livestock and the production of cocoons was retained in this new series as they were directly estimated from primary evidence. The only assumptions used were those to estimate animal product output for 1938.

An additional series was created by assuming that the value of livestock produced a constant rate of animal products to the rate of 30% per annum. This enables the elimination of the assumptions which were necessary to estimate animal products in 1938. The results are presented below: the two new series have low correlations to the estimate of gross animal production output or to the estimate of crop production. The new series does not fit with the known distress of the animal sector in the 1930s. The series based on the gross output per enumerated animal exhibits violent yearly variations in output that seem implausible, while the series based directly on the value of livestock seems to miss time significant milestones in animal production. The series has its peaks and troughs

a year ahead of the animal model estimate. This is because of the unique nature of animals being both the stock and the final product; thus when many animals are slaughtered in a year the volume of animal products increases, while the total stock of animals decreases; the new estimate based on the stock of animals fails to take this into account. Thus the model used better encapsulates the yearly fluctuations of animal production, with important ramifications in the GDP growth rate.

Figure A.2: Comparing animal estimates with series of minimised assumptions



Source: Table 1.14; Cyprus, *Statistical (Blue) Books* 1921-1938.

Forestry

Malta did not have forests; the pruning of trees created some leftovers that were used as firewood and their value and volume was recorded in the annual reports of the department of agriculture. These were included as forestry output for Malta. The forestry department was one of the first departments set up by the British administration in Cyprus; it was considered critical for the administration to introduce some level of forest management not practised under the Ottomans as the Cypriot forest area was a state asset. Thus a substantial amount of primary information was available. Forests were still important in Cyprus during the period due to the island's dependence on wood fuel and the lack of alternative building materials. The forests of Cyprus were substantial relative to the island's size: by 1939 the areas designated as forests still represented 18% of the land area of Cyprus[50]. The main areas of forest activities where on the central Troodos mountain range, although substantial firewood and charcoal was produced throughout the island. Less is known of

[50] Waterer, R.R., *Cyprus: Empire Forests During the War 1939–1945*, (Nicosia: GPO, 1946), Ch.1.

the production on the Pentadaktylos range as it was not directly placed within a forest management scheme at that time. The estimates were constructed by information provided in the annual reports of the forestry department as well as additional reports published by contemporary conservators of forests[51].

More than half of the total timber produced domestically was absorbed by the mining industry. The building trade also absorbed large amounts of timber, with less being used for carpentry. Firewood was the staple household energy source for the villages and as a fuel for industry. The largest company of Cyprus, the Cyprus Mines Corporation (CMC), was considered to be more technically advanced than other production facilities; yet in the mid-1920s all its energy needs where still satisfied by wood fuel[52]. Cypriot wood products were not considered to be good quality as CMC found imported timber superior[53]. Other industries, such as the lime burning industry, depended almost exclusively on domestic production of wood fuel[54]. As a result the total yield of Cypriot timber was not enough to satisfy the needs of the colony resulting to the colonial administration prohibiting the export of timber[55].

The forested area was also important for animal grazing with important animal grazing rights and permits provided for neighbouring villages. The collection of timber, charcoal and wood fuel also required licences. However such rights were usually provided for free, while a substantial number of herders illegally used the forest for fodder and for fuel collection.

The main forestry products were timber and fuel. Classification of the products produced in Cypriot forests, changed over the period. Timber products were sometimes given in the amount of round, plank and sawn wood produced, while fuel could be divided into firewood and charcoal. In estimating timber production, all categories were merged into the 'timber' category as they were all measured in cubic feet without bark. In most years, there was an estimate of both private and government production in volume terms (usually in terms of cubic feet), as well as the revenue per product for the government production. Price data are scarce, with only the average price for timber is provided for the years 1933 to 1927. Minor products such as nursery seeds, forest fruit, tanning

[51] National Archives, London: File: CO69/38, 40, 42, 43, 45 "Annual Report of the Forest Administration in Cyprus", for the years 1921–1938; Unwin, A.H,. *Decennial Report of the Forest Administration in Cyprus for 1921–1931* (Nicosia: Kosmos, 1932)
[52] Lavender, D., *The History…* (1962) p.178
[53] Ibid. p.192
[54] National Archives, London: File: CO69/45 "Annual Report of the Forest Administration in Cyprus, 1938" p.14
[55] Ibid. p.13

supplies, vegetable oils, canes and spices are provided in aggregate value terms without additional information in terms of prices or volumes[56]. Thus the minor forest products were deflated to constant prices based on a Paasche Price index of the major timber products.

The lack of price information on the input and output of forestry does not allow for double deflation; the series is deflated by deriving value added in volume and multiplied by imputed 1938 prices. The prices were calculated by comparing the volume produced by forestry product and the revenue received by government for that product in order to have an average price per cubic foot.

Estimates for 1921 were also included some of the estimates for 1922 since the department moved from the administrative reporting year to the calendar year. The estimates for the 15 month period 1921 -1922 were modified by removing 3/15 of the production to 1922 (which only has estimates for 9 months of the year), thus annualising production figures. The data reported increased over time so by 1929 there were recorded volumes of timber equivalent in trees, round wood. No attempt has been made to extrapolate such estimates backwards due to lack of additional information; thus the increase in production is partly due to more extensive recording of timber production.

In classifying timber production, it was considered necessary to modify the ESA 1995 directives. The ESA NACE Rev.2 nomenclature requires the separation of support activities to agriculture and forestry[57]. However such support services were impossible to be separated: thus fire fighting was included in the service sector and not in the forestry sector.

[56] Ibid. Table II; Table IV
[57] Eurostat, *NACE Rev.2:Structure and Explanatory Notes* as seen 26/11/2007 http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/index.htm

Appendix E: Detailed Methodology of Manufacturing and Handicraft estimates

Sources

The manufacturing sector output of Cyprus and Malta was estimated primarily by using information from the statistical (blue) books and censuses. The statistical blue books provided information over the number of establishments, the number of persons employed, the cost of materials used, the quantity produced and the values of the products. The information on manufacturing industries within the blue books is somewhat patchy and by no means exhaustive as the statistical (blue) books only enumerated factories and small manufacturing establishments. As a result, there are some industries which were not covered due to the manufacturing process taking place within the household.

This data was not sufficient to estimate all of manufacturing and handicraft production using the output approach. All handicrafts and some formal manufacturing industries had to be estimated using the income approach. Even when the output approach was used, some assumptions were still necessary due to the lack of sufficient information over the nature of the manufacturing processes. Although sales of goods are recorded in the statistical (blue) books, there is no information on the yearly change of stock or on goods sold which were actually bought for re-sale. Thus it was necessary to assume that companies began and ended the accounting period with a constant level of inventories, and that all goods sold were produced on-site.

Manufacturing in Cyprus

For Cyprus, there was sufficient information in the statistical blue books to estimate the value added of for the benchmark year 1938 and the yearly volumes for sixteen industries, two of which were included in the agricultural, rather than the manufacturing sector[1]. The value added per unit created in 1938, was assumed to be constant and applied to the yearly volume produced to estimate a yearly value added in 1938 constant prices. As a result, it is assumed that there was no technological change affecting the ratio of value added to total output during the 1921–1938 for those industries.

For an additional six industries it was possible to combine information available in the statistical (blue) books with other qualitative and quantitative material and thus create estimates based on the

1 The sixteen industries were: gypsum factories, potteries, brick & tile factories, oregano oil factories, tanneries, cotton ginning, tobacco, mineral water factories, soap factories, macaroni factories, ice factories, carob crushing factories, jam factories, citrus oil & juice factory, wine production and cheese. Wine and cheese making were estimated in the agricultural sector as it was not possible to separate farmer production form modern distillery production.

inputs used by these industries[2]. The industries were central to the rural-urban trade, and were important in complementing rural incomes. Not including flour milling and bread making would exclude a large part of within-household manufacture, where the majority of food processing took place. Similarly the silk industry was an auxiliary activity for rural female labour and acted as an important supplement to rural incomes; this was not captured by occupation statistics of the period, as census officials only recorded the primary occupation of the interviewee.

Milling and Baking

Milling and baking were significantly large sections of the manufacturing sector. The output estimate of milling was constructed by estimating the wheat available to be milled. The total quantity of wheat produced in a year was added to the imports of wheat in order to estimate the total amount of wheat in a year. The retained seed and exports were subtracted and the remaining wheat was converted into flour, semolina flour and bran, based on qualitative sources on milling in Cyprus, cross-checked by the conversion ratio used in research on Ottoman Macedonia in the early 20th century[3]. The value of the wheat to be milled in 1938 prices was estimated as intermediate consumption of milling; the value of the milled products (bran, semolina, flour) in 1938 producer prices was estimated as the gross output. The subtraction of the intermediate consumption from the gross output created a yearly value added of the milling industry.

The output of bread baking was estimated using the volume of flour as an input. The total quantity of flour milled in a year (after removing exports) was added to the flour imported to estimate the total amount of flour to be baked into bread; it was arbitrarily assumed that 10% of the total flour was used to make other products. Although the proportion of flour removed is arbitrary, the amount is plausible as bread was an essential part of urban and rural diet in Cyprus, dominating the use of flour[4]. It was difficult to convert bread into a measure of weight or volume; it was assumed that 100 okes of flour provided 150 okes of bread based on the addition of water and other baking material. The value of the flour converted into bread in 1938 prices was estimated as intermediate consumption; the value of the bread baked in 1938 retail prices was estimated as the gross output.

2 The six industries are: flour milling, bread making, rope factories, ship building, silk making (spinning, weaving and goods manufacture), and cotton spinning.

3 The conversion ratio given for Cypriot hard wheat for every 100 okes of wheat milled the miller produced 75 okes of flour, 22 okes of bran and 3 okes of semolina. Source: "Cereal Crops", *The Cyprus Agricultural Journal*, Vol.XXXII Part.1 (March 1937). In Ottoman Macedonia in the early 20th century, every 1 kilogram of hard wheat produced 750 grams of flour and 250 grams of bran. Source: Akarli, A.O., in Pamuk and Williamson *The Mediterranean Response...* (2000) p.127

4 Surridge, *A Survey of Rural Life...* (1930) p.20

Due to the lack of data over the consumption of wood, fuel consumed during baking was arbitrarily assumed to cost 20% of the gross output in order for the total cost of fuel to rise in step with the volume of bread produced. The cost of fuel is added to the cost of flour and subtracted from the gross output to estimate baking value added.

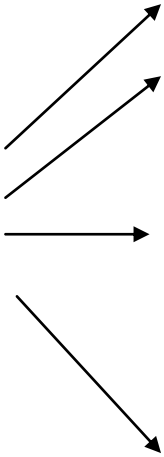
Silk Production

The production of silk in Cyprus was estimated separately for government silk filatures, non-government filatures and domestically produced silk goods. Data from the statistical (blue) books was combined with data for cocoons from the annual reports of the agricultural department to create a flow diagram of inputs and uses[5]. The sources provided data that was sometimes conflicting; in order to resolve these conflicts it was necessary to introduce some assumptions. It was assumed that the cocoons not kept as seed were divided into three markets which were mutually exclusive: most cocoons were made into silk cloth in households, some were bought by merchants and some bought by the government silk filature. Those cocoons bought by merchants were either exported or made into silk goods by households on a piece-rate system.

The silk produced within households was estimated as a residual to the total number of cocoons produced in a year. After subtracting the cocoons kept as seed, and the cocoons converted into silk by merchants and the government silk filature, the residual was converted into silk cloth by assuming that 1 oke of cocoons led to 0.255 oke of cloth. The conversion ratio assumed that homemade production was 15% less productive than merchant made silk, as the best cocoons were controlled by the merchants through agreements with the cocoon producers. The value of cocoons spun at home in 1938 prices was considered as intermediate consumption, while the value of silk cloth in 1938 prices was considered as the gross output. The value added was estimated as the subtraction of intermediate consumption for gross output.

5 The cocoons as reported in the agricultural production per annum were divided in the cocoon's uses. The number of cocoons kept for next year's agricultural production were given in the agricultural department's annual report for 1928-1938; cocoons bred for centipedes for 1921–1927 were based on the average number of eggs kept for production 1928-1938. Sources: National Archives, London CO69/38,40,42,43,45 "Annual Report of the Department of Agriculture" years 1921-1938.

Table A.16 Silk Estimation Method in Cyprus

Inputs	**Uses**	**Products**	***To be Estimated in Manufacturing Output***
Cocoons 	Kept for next year	Seed	
	Home Silk Production	Non - Merchant Silk Production	Non - Merchant Silk Production
	Bought by Merchants	Export of Cocoons	
		Reeled into Thread by Merchants	Merchant Silk Filatures
		Made into Silk Goods	Merchant Raw Silk
	Government Filature	Reeled into Thread in the Government Filature	Government Sponsored Silk Filature

Primary data indicates that some cocoons were bought by merchants and then divided into three uses. There is data on the number of cocoons reeled into thread and it was necessary to assume that all exports of raw cocoons were given by the merchant purchased cocoons. The cocoons that were made into silk goods by merchants were calculated as a residual of exported or reeled into thread[6]. The residual was converted into cloth by assuming that 1 oke of cocoons made 0.3 oke of cloth. The silk filatures operated by the merchants were assumed to convert 1 oke of cocoons to 0.7 oke of thread. The value added of the silk thread and cloth in 1938 constant prices was estimated by subtracting the value the cocoons used from the gross output of silk goods produced.

The government provided substantial incentives for the establishment of a private filature in Paphos in 1923. Cyprus was the second most important silk-producing country in the British Empire, and the rearing of silk-worms was an important source of income for rural households in Nicosia, Paphos and Karpasia. The filature was intended to act as a showcase for young women in order to improve the quality and quantity of silk thread produced[7]. The filature was not successful as it could not procure enough cocoons because merchants bonded production by providing credit prior to the

6 Data on the cocoons reeled into thread are available from 1929–1938. It is assumed that for the missing data the average cocoons used for thread in the period 1929 to 1938 is broadly representative of the period.

7 National Archives, London CO69/38, Annual Report of the Department of Agriculture for the Year 1923, "Sericulture"

consignment of silk goods; as a result the government filature run on imported cocoons[8]. The filature closed in 1931 and partially re-opened until its permanent closure in 1934. Enough data is available to estimate intermediate consumption, and gross output in current prices, and thus create a yearly series of value added in current prices. In order to deflate the value added in 1938 prices the price of raw silk was used as a deflator.

The assumption of mutual exclusivity does lead to problems. The residual nature home production means that sometimes there were not enough cocoons for home production after subtracting all other uses. More research on the nature of the silk industry is needed in order to construct a more reliable estimate.

Rope and Thread

Rope and cotton thread output were estimated using the respective inputs of hemp and cotton. Rope was estimated on the input of hemp used to produce rope. The quantity of domestically produced hemp and imported hemp were added. The need to keep some hemp for seed was removed by the sum and the remaining hemp was converted into rope. The conversion ratio used was one oke of hemp to one of rope. The value of the hemp to be converted into rope in 1938 prices was estimated as intermediate consumption; the value of the rope created in 1938 retail prices was estimated as the gross output. The subtraction of the intermediate consumption from the gross output created a yearly series to the value added of rope. Cotton spinning was calculated by subtracting cotton exports and cotton to be used as seed from the domestic cotton produced and assuming a conversion ratio of cotton to thread of 1 oke of ginned cotton to 0.8 okes of cotton thread. The value of cotton thread is estimated as gross output and the cost of raw cotton was estimated as the intermediate consumption, and an identical process was repeated for spinning in Malta.

Boatbuilding

There was enough data for the production of small boats in current prices and was deflated using a Paasche price index of forest products to 1938 factor prices. However the output was minimal, being less than 1% of GDP.

8 National Archives, London CO69/40, Annual Report of the Department of Agriculture for the Year 1929, "The Silk Industry"

Other Products

The statistical (blue) books also provided sufficient information in order to estimate value added for the 1938 benchmark for thirteen other industries, but not enough to estimate yearly output due to gaps in the data series[9]. A thorough analysis of yearly exports and qualitative sources was undertaken to evaluate the starting year of such production in Cyprus; as a result, yearly output of such industries was only calculated if sufficient evidence was available that such industries were in production during the calculated year. Value added was extrapolated backwards from the benchmark year by assuming the growth rate of these industries was similar to the average for which annual value added output was known. Such industries did not constitute a large section of the total manufacturing output, as the proportion to the total manufacturing and handicraft sector was only 3.4%.

Handicraft Industry in Cyprus

The output estimation described above comprised of the most important manufacturing activities of Cyprus during the interwar period that took place within factories or small enterprise establishments. It confirms that industrialisation in Cyprus was low: there were no significant heavy industries, nor were they any dynamic industries created during the period, despite the overall increase in manufacturing production. However with the exception of bread baking, rope making and oil making, the traditional handicraft and small scale manufacturing activities were not taken into account. Information for smaller industries such as basket makers, lace workers and furniture workers was not recorded in the statistical (blue) books. In order to estimate the output of the handicraft industry, a compromise was necessary as output needed to be estimated by the less reliable occupation statistics.

In estimating historical GDP, a researcher is highly conscious of the trade-off between accurate results and extensive coverage of sectors. This is particularly the case for estimating output using the production approach for the handicraft and the service sectors, where any information will be sporadic and incomplete. There is no uniform approach in how to estimate the output of the handicraft sector: some researchers do not make specific attempts to include it due to the inconsistency of using occupational statistics with estimating output from the production approach,

9 For these thirteen industries some or all quantity estimates except 1938 were missing: boot cream factories, button manufacture, broom manufacture, artificial teeth manufacture, foundries, cement tile factories, toothpaste & cleaning powder factories, hosiery factories, sumac processing factories, flax schutching mills, oil works, breweries, and gum manufacture.

or are confident that the manufacturing indicators encompass their handicrafts sector[10]. Hjerppe painstakingly estimates the handicraft sector using the production approach, supported by extensive research on the manufacturing and handicraft history[11]. Schulze follows Komlos in assuming that the handicraft sector is the one fifth of the manufacturing, mining and construction industries, and extrapolates yearly value added by using a weighted index of the manufacturing and the construction sector[12]. Ivanov estimates crafts from census occupations multiplied by annual earnings based on wages for masons, journeymen and apprentices; this is supplemented by multiplying the number of females of working age with the average number of days spent for work from home based on peasant account books and contemporary surveys; Johnson also estimates crafts from census occupations multiplied by annual earnings[13]. It was considered that an attempt to estimate the handicraft industry was necessary in order to fully capture the output of Cyprus, while being sensitive to the limitations of the data sources available. A similar method to Johnson was used: the gross wages were estimated using census and wage data, and then converted to value added by using industry specific wages to value added ratios. The end result is certainty an underestimate as great care was taken to eliminate any double counting.

There is information on thirty seven occupations that were not enumerated in the industries estimated above; however goldsmiths, printers and book makers were excluded in order to maintain the estimate as one of the handicraft industry[14]. The 1931 census provides information on occupations divided by sex and the number of assistants per occupation. It is unfortunate that the census does not provide vital information on whether the person interviewed was actually in employment at the time when the interview was taken; since the censuses took place during the great depression, it was deemed important to somehow account for the unemployment within the stated occupations. Due to the lack of data of unemployment within stated occupations in Cyprus, it was assumed that the unemployment within each occupation as stated in Malta was representative

10 Prados De la Escosura, "Spain's Gross Domestic Product" … (1993), p.23, pp. 28 – 30; Κωστελένος, *et al,* (2007); p.93 Kostelenos, *Money and Output…*(1995) p.175 - 176

11 Hjerppe, *Finland's Historical National Accounts*, (1996) pp.33 -34

12 Schulze, "Re-estimating Austrian GDP, 1870–1913…" (1997) p.12; Schulze, "Patterns of Growth and Stagnation… (2000) p.335

13 Ivanov, "Bulgarian National Income 1892 – 1924…" (unpublished), Appendix A; Ivanov, & Tooze, "Convergence or Decline..." (2007) p.679, p.694; Jonsson., G., "The GDP of Iceland 1870 – 1945"in Grytten (ed.), *Nordiske Historiske Nasjonalregnskaper* (1999), p.10

14 The thirty four industries are: candle making, wreath making, musical instrument making, mattress makers, carpenters, cabinet makers, chair makers, cart builders, agricultural implement makers, coopers, blacksmiths, toolmakers, cutlers, farriers, gun makers, confectionery makers, dry meats preservers, lime processors, gypsum manufacturers, comb makers, embroiderers, hand knitters, lace makers, book binders, cardboard box makers, basket makers, reed plaiters, milliners, sock makers, tailors, dress makers, fishing net makers, carpet makers.

to Cyprus. Thus the stated occupation statistics of 1931 were assumed to suffer a rate of unemployment of 5% based on the unemployment within industrial occupations in 1931 in Malta[15]. As the census classified occupations rather than establishments, great care was taken not to have any occupations that were already enumerated in manufacturing activities. Thus in order to minimise the possibility of double counting, all foundry work as well as work relating to cotton preparation was excluded. Therefore, the important handicraft industry of cotton weavers and spinners was excluded as the census did not establish how many worked in cotton spinning factories (enumerated using the output approach) and how many worked in the handicrafts sector.

People in handicraft occupations in 1931 were assigned daily manufacturing wages of 1938 as provided by the 1938 statistical (blue) book. The book provides different wage rates for sectors of the economy (including manufacturing) for skilled labour, unskilled, labour, and wages for women and young apprentices. Such daily wages were converted into yearly incomes (after adding non-monetary returns) based on Surridge's account of public holidays and conditions of work in 1929[16]. The manufacturing wage was reduced by 10% to create a wage differential between formal manufacturing and the handicraft sector. The number of males was multiplied by a male wage, and the women with a much lower female wage.

The estimate of wages in the handicraft sector in 1938 prices is not an estimate of value added. Although the majority of value added is assigned to wages in small industries, the existence of capital expenditure and profits are also important. Results were compared to Felner's wage / gross output estimates for early 20th century Hungary as well as wage to value added estimates of Cypriot manufacturing industries calculated with the output approach in an attempt to extract value added estimates. The relation of real wages to gross output in the national income estimate in 1950 was also consulted to provide an accurate picture of the relation between total wages and value added.

Thus the wage estimated would be supplemented by the capital and profit of the handicraft industry to estimate value added[17]. Based on the observations in Table A.17, it was decided that the total

15 Malta, *Census... 1931* (1932) p.xxxiv "Unemployment". For manufacturing which also involved a large retail element, such as tailoring, dressmaking, millinery, boot making, confectionery making and mattress making, the lower commercial sector unemployment rate of 3% was assigned, as these sectors are more related to the commercial sectors of the economy.

16 Surridge, *A Survey of Rural Life...* (1930) p.24; Daily wages were commuted to yearly wages by excluding 23 religious holidays and Sundays.

17 Source: Friedrich Felner, "Das Volksvermögen Österreichs and Ungarns" (1915); Cyprus, *National Income...* (1951)p.5; See table A.13.

wages in 1931 represented an aggregate 70% of the total value added. Such an estimate is very conservative as it represents the lower estimates based on Table A.17.

Table A.17: Comparisons of total wage to gross output and value added.

Author and Country (Date)		Felner – Hungary (1911)	Felner – Hungary (1911)	Statistical Office - Cyprus (1950)	Own Estimates on similar industries - Cyprus (1931)
Industry	Weight in Handicrafts	Wage / Value Added*	Wage / Gross Output	Wage / Value Added	Wage/ Value Added
Carpenters	0.206	20.7	32.5	26.9	N / A
Dress Makers	0.195	50.4	20	9.9	N / A
Boot Makers	0.195	88.5	19	22.7	N / A
Lace Makers	0.103	48.6	30		N / A
Tailors	0.082	50.4	20	9.9	N / A
Blacksmithing	0.044	49.9	24.7	40.2	N / A
Tool Makers of Machines and Tools	0.031	39.5	25	40.2	N / A
Basket Makers	0.021	20.7	22.5		76.8
Saddlers	0.016	88.5	N / A	27.4	66.9
Confectionery Makers	0.015	40.5	N / A	15.1	N / A

* Felner's Wages/value added ratios are only provided for large groups of industries (i.e. metal production, clothing, textiles, wood) and are not as representative as the wage to gross output ratios.
Sources: Felner, "Das Volksvermögen Österreichs and Ungarns" (1915); Cyprus, *National Income: Product, Income, Expenditure 1950* (Statistics Section, Secretariat, 1951), p.5; Estimates based on Appendix B.

The benchmark estimates of the censuses were extrapolated into annual figures using the growth rate of the formal manufacturing industry. As Schulze has pointed out, when there is no evidence of a decline of the handicraft sector in absolute or relative terms it is best to assume that formal manufacturing output and handicraft output grew at the same rate[18]. This is confirmed by the census occupation statistics: it is clear that at least in absolute terms occupation in the handicraft sector was increasing[19]. Thus the growth rate of the formal manufacturing sector is used to extrapolate the yearly output of the handicrafts sector.

Robustness of the Cypriot manufacturing estimate

In order to check for the plausibility of the results, counterfactual scenarios were established regarding the growth of the industries whose output was not directly estimated. The group of

18 Schulze, "Patterns of Growth and Stagnation… (2000), p.335

19 Handicraft occupation s in Cyprus increased by an annual rate of growth of 1.79% in 1921-1931, and 1.26% in 1931-1946. The respective population growth rates where 1.13% and 1.91% respectively. Sources: Hart-Davis, *Cyprus... Census of 1921*, (1922); Hart-Davis, *Cyprus... Census of 1931* (1932); Percival, *Cyprus...1946* (1947)

companies for which only a benchmark for 1938 could be established, as well as the industries whose output was extrapolated using census results were assumed to develop under four scenarios:

a) they were assumed to grow as the average growth rate of the known industries (the procedure used above)
b) they were assumed to remain constant (i.e. no growth),
c) they were assumed to grow at half the overall growth rate for 1921 – 1938 of the known industries
d) they were assumed to grow twice as fast the overall growth rate of the known industries.

If one compares the values of estimate a) with the counterfactual scenarios b), c) and d), one can evaluate how large is the possible error if the indirectly estimated output did not follow the average rate of growth. The results are very encouraging: the differences between the estimation and the alternative scenarios are very small. With doubling and halving the growth rate, the difference between the estimated value and the counterfactual estimates is under 5%. When assuming that the output was constant, the maximum difference is 11.5%. If one averages the annual differences between the estimated and the counterfactual values the difference is less than 1.4% of the originally estimated value for all series. Thus the estimation is considered relatively accurate; changing the growth parameters for the indirectly estimated industries does not significantly alter the estimated results.

The proportion of manufacturing to total output can be compared with the proportion of manufacturing employment in total employment in order further ensure the plausibility of the estimates. The results are encouraging: the share of total employment was falling as the relative contribution of manufacturing and handicrafts sector to GDP was declining. The labour productivity of manufacturing is also not implausible.

Manufacturing in Malta

The estimate of the manufacturing sector output in Malta for 1921-1938 was more difficult due to much more limited primary data in the statistical (blue) books. The books inform the researcher on what manufacturing activities were present, but not with enough information to allow an estimate based on the output approach. As a result, the estimate for Malta was much more reliant on indirect estimation, mainly through known inputs and through extrapolating value added by the total wage bill. Milling and bread making was estimated in the same way as in Cyprus. It was necessary to

assume that the wheat milled in Malta had an identical conversion ratio to wheat milled in Cyprus. This is plausible as both countries cultivated similar types of hard wheat. Cotton thread production was also estimated using the method explained for Cyprus above.

Canning, Chocolate and Beer

It was possible to estimate seven industries by using domestic production and import data of raw materials[20]. Pasting and canning of tomatoes was estimated by removing all exported tomatoes from the domestic production, as there were no imports of raw tomatoes for pasting / canning. It was estimated that 2/3 of the tomato crop was processed, and the tomatoes were assigned to either pasting or canning based on the basis of an estimated ratio[21]. The conversion ratio for tomato pasting used was 5 cwt of tomatoes for 1 cwt of tomato paste and 3 cwt for 1 cwt of canned tomatoes. The value of the tomatoes pasted / canned in 1938 prices was estimated as intermediate consumption of the process; the value of the outputs in 1938 retail prices was estimated as the gross output. The subtraction of the intermediate consumption from the gross output created a yearly value added of the industries. Chocolate production was estimated based on imports of cocoa, and beer was estimated using the number of import of hops as neither hops nor cocoa were produced in Malta. The industries estimated using output approaches constituted 25.6% of the total manufacturing sector. Thus a much smaller percentage of manufacturing in Malta could be estimated directly than Cyprus, leading to a greater margin of error in the Maltese manufacturing output.

Due to the lack of direct output data, the remaining manufacturing sector production was on different principles. An extensive use of statistics within the statistical (blue) books and in the censuses formed the basis for indirectly estimating the remaining manufacturing industry. Thirty one industries were estimated using the statistical (blue) books occupation statistics multiplied by the wages in 1938 in order to produce total wage estimates[22]. For the years where the occupational statistics were missing, the total wage estimate (in 1938 wages) were annualized based on the

20 The seven industries estimated are: canned tomatoes, tomato paste, milling, bread making, chocolate production, beer production and cotton spinning

21 The respective assigned weights are 57% for pasting and 43% for canning: it was estimated by assuming that the number of tomatoes processes was proportional to the number of persons employed.

22 The thirty one industries are: fruit preserving factories, ice manufacturing, ice cream manufacturing, bran and forage milling, turkish delight, mineral water manufacturing, cigarettes, cigars, shirt factories, cap sewing, gilders, printing , caustic soda making, carbonic acid gas creation, soap manufacture, fireworks making, orange flower distilling, glass mirror manufacture, earthenware manufacture, lime factories, cement title manufacture, metal pipe factory, foundries, tinsmiths, metal polish factories, chromium plating, upholstery, boat building, gold and silver smiths, buttons manufacture and the Royal Naval l Dockyard, the most important manufacturing establishment on Malta.

growth rate of the intermediate goods imports in Malta; the reason for choosing intermediate consumption was that most of Malta's manufacturing was dependent in inputs from abroad as the basic inputs for the manufacturing industry (metal, chemical, lubrication and power) were imported due to the lack of a heavy industry base. The total wage bill, estimated in constant 1938 wages, was assumed to represent 70% of the total value added. The formal manufacturing industries estimated using blue book occupation statistics (and excluding the Royal Navy Dockyard) was 13% of the total manufacturing and handicraft value added in 1938.

The Royal Navy Dockyard

The Royal Navy Dockyard was the most important industrial establishment in Malta[23]. Ever since the occupation of Malta by the British, the dockyard at the Grand Harbour was enlarged and its facilities were upgraded: by the interwar period the Malta HM dockyard was the only station between Gibraltar and Singapore capable of repairing the capital ships of Her Majesty's Navy[24]. The dockyard and the naval station dominated the economy directly through employment for the naval services and the dockyard, and indirectly by providing washing, entertainment and retail services to the sailors visiting Malta[25]. It is argued by some that the existence of the dockyard increasingly acted as a double edged blade; the importance of the Royal Navy and its dockyard both reduced possibilities for diversification and increased Malta's reliance on outside sources of finance for its wellbeing[26].

Despite the consensus among contemporaries and historians over the pivotal role of the dockyard to Maltese welfare, there has not been an attempt to estimate its benefits to Malta in a quantitative way. This is partly due to the lack of definite accounts of the dockyard: despite being the larger employer in Malta, the dockyard was not subject to the Maltese self-government's jurisdiction, and financial records in the British Admiralty Office papers (ADM) for the Maltese dockyard were not found. Archival work did provide some information over rates of pay, workers employed and capital infrastructure work on the dockyard during the interwar period, but it did not provide output of repaired ships or the total expenditure of the British Government on the dockyard[27]. Such

[23] Abela, *Malta* (1963), p.2
[24] Pratt, *East of Malta West of Suez...*(1975) p.121
[25] Ellul, "Maltese Imperial Mentalities" (1998) pp. 95- 114, p.101 - 109
[26] Fenech, *Responsibility and Power…* (2005) p.8; Frendo, H.,, "Everyday Life in 'British Malta'", *Storjia* 1996, p.37 – 47, p.39; Cassar, C.,, "Everyday Life in Malta in the Nineteenth and Twentieth Centuries" in Mallia-Milanes, V., *The British Colonial...* (1988), pp.91 – 126, p.116
[27] For rates of pay see: Dockyard and Imperial Workers Union (Malta), *Memorandum* (Valletta: Empire Press, 1943); National Archives, London. File: ADM 116/5290, "Pay and Bonus Rates Locally Entered Workmen at Malta", 1936-

information was supplemented by other sources: the annual reports for the labour department, published and unpublished studies of the dockyard, and archive material enabled accurate data on the structure of employment and the wages given to dockyard workers[28].

As a result of such efforts, an average annual employment to the dockyard was re-constructed. The average employment was multiplied by a dockyard wage that was constructed taking into account all the available evidence: it is 10% more than the metal working occupations to take into account the documented wage gap differential towards other metal workers and government clerks[29]. The total wages as estimated in 1938 were then assumed to represent a conservative estimate of 70% of the value added of the dockyard throughout the period: as a result the dockyard value added was estimated as 45.2% of the total manufacturing sector of Malta, dominating the manufacturing sector of the island.

A more accurate value added measurement for the dockyard would be desirable: although the estimate above does take into account changes in worker participation, it does not consider the reduction of working hours that the dockyard enforced at times of distress[30]. At the same time, the estimate fails to take into account the considerable additional capital expenditure invested in the dockyard: a new floating dock was introduced, oil storage tanks were constructed and new hydraulic machines were installed[31].

Handicrafts in Malta

The handicraft sector of Malta was estimated by extrapolating inter-censal employment rates using the census data for 1921, 1931 and 1948. Extreme care was taken not to introduce double counting in the estimates[32]. The 1931 census provides information of within-occupation unemployment for 1921 and 1931. Unemployment figures were annualized using the inter-censal growth rates for the period 1921–1931. For the period 1931 to 1938 it was assumed that unemployment per sector was

1937, 1940-1944, 1945; ADM 116/3660 "Malta: Pay of locally-entered Dockyard Industrial Workpeople", 1932-1933; ADM 116/5269 "Malta Dockyard: Employees' Improved Scale of Wages, Conditions of Service, etc", 1928-1930, 1934-1938, 1945; ADM 1/20578 "Locally Entered Workpeople Employed on Dockyard Craft Malta: Rates of Pay".

[28] Sources: National Archive, London. File: CO 161/120, 121, 122, 123, 124, 125 Annual report of the Labour Office, Malta; Fenech, *Responsibility and Power…* (2005) p.251; Ellul, M., *H.M. Naval Dockyard*, (2004) p.42; Cassar, "Every day life in Malta.." (1988), p.95

[29] Frendo, "Everyday Life in 'British Malta'" (1996) p.39

[30] Bonnici, & Cassar, *The Malta Grand Harbour...* (1994) p.115; Ellul, *H.M. Naval Dockyard, Malta* (2004) p.41

[31] Bonnici & Cassar, *The Malta Grand Harbour…* (1994), pp.215 -216

[32] The existence of shirts and caps factories resulted to a necessary reduction of tailors and milliners by 40% to avoid possible double counting. Other handicraft industries that were partially enumerated in the formal manufacturing sector were removed.

declining until an increase in 1936, whereupon it continued its previous declining trend. The number of employed per occupation were multiplied by the respective handicraft yearly wage in 1938: it was assumed that handicraft wages were 10% less than formal manufacturing in order to take into account lower levels of productivity. This procedure was not possible to reproduce for Cyprus, since the occupational classifications were changed in each census. The handicrafts sector value added was 17.2% of the manufacturing and handicraft value added in 1938[33].

Robustness of the Maltese Estimates

In order to check for the possible accuracy of the Maltese results, counterfactual scenarios identical to scenarios for Cyprus have been used to evaluate the plausibility of the indirectly estimated manufacturing output. The group of companies for which only a benchmark for 1938 could be established, as well as the industries whose output was extrapolated using census results were assumed to develop under four scenarios:

a) they were estimated as described above
b) they were assumed to remain constant (i.e. no yearly growth and the value added equal to their estimate for the benchmark year for the period 1921-1938
c) they were assumed to grow at half the overall growth rate for 1921–1938 of the known industries
d) they were assumed to grow twice as fast as the overall growth rate of the known industries.

If one compares the values of estimate a) with the counterfactual scenarios of estimates b), c) and d), one can evaluate how large is the possible error if the indirectly estimated output behave differently from the average growth of the directly estimated output. The results are less encouraging than robustness tests for Cyprus, due to the limited number of directly estimated output and the extensive use of occupational data in Malta. In all three scenarios (no growth, double growth of half the growth of the estimated total) the final differences are large, with up to 37% difference from the estimated value. If one averages the annual differences between the estimated and the counterfactual values the differences are: b) 14% c) 5.9% d) 12.5%. This is because Malta's estimated manufacturing output was too heavily reliant on indirect sources of output estimation. Although the estimate of the manufacturing value added is not as robust as for Cyprus, it is the best estimate one can calculate for Malta at the present time; more research is needed into the input-output structure of the interwar Maltese economy in order to provide a more accurate estimate of the manufacturing sector. The occupation statistics indicate that the value added in manufacturing

[33] The percentages of the four different estimating procedures result in 101% of the total value added; this is due to the rounding up of the percentages to three significant figures.

has been a conservative estimate as labour productivity per worker is higher in manufacturing industries, but seem to correspond to sector remaining stable in terms of output and employment[34].

[34] Cassar, "Everyday Life in Malta…" (1988), pp.91 – 126, p.116

Appendix F: Detailed Methodology of Construction and Implied Rental Income Estimates

Construction

Malta, Sources and Estimates

The problematic living conditions in Malta were apparent in the overcrowded conditions of the conurbations around the grand harbour. Such conditions led to a very high infant mortality rate and the outbreak of cholera epidemics, such as the cholera epidemic of 1936[1]. The Maltese government appreciated the seriousness of the problem and attempted to partially alleviate the poor living conditions by the workmen dwelling act of 1927, which set up a fund for the construction of sub-urban housing for families with limited means[2]. The annual report of the Maltese commissioner of labour included the volume of construction for the period 1921–1938 in detail, including the houses and apartments built, any alterations to existing buildings, and the construction of stables and store rooms[3]. The commissioner of labour also provided for the price of such construction in 1938 prices. The intermediate consumption was estimated for 1938 and the share of value added to total output was assumed constant for the period 1921–1938. The construction of commercial properties was assumed to follow the expansion of the housing industry as new commercial properties were constructed when new houses were built in Malta; they were assumed to equal 10% of the yearly value of housing construction. Public construction was added by estimating the value added in current prices and deflating it by a construction materials index. The share of value added to total output was assumed constant for the period 1921–1938.

Cyprus, Sources and Estimates

The poor living condition of the people of Cyprus was one of the main issues of the Cypriot press. In Cyprus, the living condition of most villagers was considered substandard and unhealthy. The colonial government, spurred on by the colonial office's new-found (but vague) commitment for improvement of native living standards, introduced a host of piecemeal measures to improve life in the country side[4]. Cypriot administrators thought that living conditions of the country could improve gradually if efforts to improve the construction of new housing units were undertaken. Despite the interest by the government, such efforts did not materialise until 1938, when a small

[1] Ellul, "Maltese Imperial Mentalities...:" (1998) p.98
[2] Fenech, *Responsibility and Power...* (2005), p.175
[3] National Archives, London. Files: CO161/120, 121, 122, 123, 124 "Report of the Commissioner of Labour " 1921-1938
[4] Hodge, *Triumph of the Expert...* (2007). p.7. A Summary of Measures Undertaken in Cyprus: National Archives, London. File: CO69/45 "Annual Rural Development Report for 1938"

pilot study of rural housing improvement began[5]. The study on rural housing provided crucial data on the construction of houses[6]. This was combined with dwelling information from the Cypriot censuses. Price and intermediate consumption estimates were based on the information in the rural and urban contraction of government housing, and were supplemented by construction costs of agricultural buildings provided in the Cyprus agricultural journal[7].

No annual construction data exist for Cyprus, despite having an active land registry and survey department during the interwar period. There were several sources of information which one could use to estimate construction, each having its own advantages and limitations. A possible option was to use the land registration estimates of the yearly value of immovable property. This method had significant disadvantages since an increase in value was indeterminate: it could be any combination of a rise in value of property, an increase in construction, a rise in the value of land or of non-movable property other than buildings was included. The tax receipt by the immovable property tax (Verghi Kimat) was also considered and rejected as it was taxed at differential rates for town and country, included all immovable property, including trees and water rights. It was also considered that the tax base of the Verghi Kimat was not complete as it was based on land registration surveys, which were not updated frequently[8].

The average cost of construction of the median house was based on information of government housing and government reports as cited above. The urban houses were constructed based on different standards. The urban house was based on the construction of a government house with local materials, but scaled down to take into account the fact that the government houses were for the British government officials and thus they were far larger than the average city dwelling[9]. The cost of the government house was given in 5 variants according to the methods used in construction. Using what was labelled by the colonial official as the "traditional" method of construction, the author estimated the cost per cubic feet in building dwelling. The house was scaled down using the average number of rooms per dwelling in the urban areas of Cyprus. Archival evidence also provided the value of a house, since the rent of a completed house was given and was mentioned to

[5] National Archives, London. File: CO69/45 "Annual Rural Development Report for 1938"
[6] Surridge, *A Survey of Rural Life...* (1930) pp.12-13, p.73
[7] National Archives, Nicosia. Secretarial Archive, File: SA1 605/1921, SA1 673/1920, SA1 1277/1919, SA1 1415/1920/1-5.
[8] Oakden, , *Report on the Finances....*(1935) p.51
[9] National Archives, Nicosia. File: SA1/1415/1920/2, "Construction of Dwelling Houses for Government officials". Note "Plan of Residence, 1938".

be 3% of the total house's value[10]. The value of the median urban house was estimated as £253.80 Cypriot Pounds in 1938 prices. The house still stands today and as the offices of the Cyprus Diabetes Society.

The median rural house was more difficult to construct as most families built their own houses, not providing valuations; the materials used were of a much lower standard than for urban housing. Using the average number of rooms of a dwelling given in the censuses, and combined by the first report on rural development which provided a lengthy description of a typical rural house, one estimated the total size of the house[11]. The cost per square feet for the urban house was revised downwards using the costs of construction of agricultural stables and outhouses, and crosschecked by Surridge's description of rural housing conditions in 1929[12]. As a result, the median rural house was estimated as having a value of £145.44 Cypriot Pounds in 1938 prices. The intermediate construction of both median houses was estimated to be 40%, using the cost of materials and labour it would need to construct it from the Cyprus Agricultural Journal[13].

The censuses provided the sum of construction in 1921–1931 and 1931–1946, divided in urban and rural dwellings, but not the yearly construction of houses. Thus one needed to break down the sum value added of 1921-131 and 1931-1946 into yearly construction of housing. Prados De la Escosura estimated the construction estimate of Spain using similar census data. In order to annualise the census data, Prados De la Escosura created an index of construction materials[14]. The index is a 3-year moving average of imported and domestically construction material and represents the availability of construction material available for annual construction[15]. This methodology was used to estimate the yearly output of construction in Cyprus. An index of construction materials, in 1938 constant prices, was created; the materials used for construction within the index were weighted based on the volume needed to build in Cyprus, taken from the Cypriot agricultural journal[16]. Then the share of each year to the total construction material for the period 1921 – 1931 and 1931 – 1946

[10] Ibid.
[11] Sources: National Archives, London. File: CO69/45 "Annual Rural Development Report for 1938" p.3; Hart-Davis, *Census…* (1922); Hart-Davis, *Report and General Abstracts…* (1932); Percival, *Census... 1946* (1947)
[12] James, & Koumides "An analysis of farming costs in Cyprus: Part 2" (1939), pp.87-109, Surridge, *A Survey of the Rural Life…*(1930) p.12
[13] James, & Koumides "An Analysis of Farming Costs in Cyprus: Part 2" (1939),
[14] Prados de la Escosura, "Spain's Gross Domestic Product" (1993) p.30-32
[15] The index was constructed by adding the major input materials of construction and their relative weight in new buildings. A consideration was made for the increasing use of building material is mining. For more details see the Appendix. Source: James, & Koumides, "An Analysis of Farming Costs in Cyprus: part 1" (1939) pp.61-65
[16] James, & Koumides "An analysis of farming costs in Cyprus: Part 1" (1939) pp.45-67; James, & Koumides "An analysis of Farming Costs in Cyprus: Part 2" (1939), pp.87-109

was used to allocate the share of houses built in that year from the total stock of constructed houses for 1921-1931, 1931-1946. The annual share was divided into rural and urban housing based on a log linear growth of the number of dwellings in urban areas provided by the censuses. Thus two series of value added were created: annual value added of urban house construction and annual value added of rural house construction. These were multiplied by the relevant value added for the median rural and urban house to estimate the value added of dwelling construction in Cyprus.

Commercial and agricultural buildings were estimated as proportion of urban and rural housing construction respectively. Farming buildings were assumed to be constructed in line with rural dwellings at 30% of the value added of rural house construction, based on the evidence provided on the typical outhouses of a rural household[17]. The value of commercial buildings was produced based on the value of constructed urban housing. The value added of public construction was estimated using the annual report of the expenditure from the blue books and the reports of the public works department[18]. The series of public construction was in current prices; it was deflated to 1938 constant prices using a price index of construction materials as weighted for the volume of materials needed to build a house.

Implied Rental Income

The housing construction estimate enabled, with some additional information, the estimation of the rental income of those dwellings. Houses were assumed to provide a service in national accounts by providing a roof; their value added was the opportunity cost of renting rather than living in one's house. The inclusion into GDP was considered necessary in order to allow comparisons between countries where the majority of the houses were owner-occupied with countries where a substantial rented accommodation. In order to estimate the implied rental income of housing, one requires the total stock of housing, the value of stock and the level of rent in the open market relative to the value of the house. To calculate the total stock of housing we first had to depreciate the value of the housing units, since house buildings depreciate with age. The best method of depreciation is the perpetual inventory method where the total stock of housing is depreciating at a constant rate according to its age[19]. The statistical service of Cyprus currently assumes that houses loose 1/75 of their value each year: thus by the 75th year of its existence, a house has no value without significant renovation and investment. Most houses in Cyprus were built by mixing clay and straw, thus their

[17] National Archives, London. File: CO69/45 "Annual Rural Development Report for 1938"
[18] Sources: National Archives, London. File: CO161/118, 120, 121, 122,123, 124 "Annual Report of the Public Works Department"; Cyprus, *Statistical (Blue) Book.* Years 1921-1938
[19] Meinen, G., Verbiest, P. & De Wolf, P. *Perpetual Inventory Method: Service Lines, Discard Patterns and Depreciation Methods* (Voorburg, Statistics Netherlands, 1998) pp.6-7

life was limited to 50 years without significant renovation and investment. The annual number of houses in urban and rural areas for the period 1921-1938 was known through the construction estimate, and that was multiplied by the value of the respective median urban and rural house. The censuses of Malta and Cyprus for the year 1921 provided the number of dwellings in every ten years from 1851 to 1921 allowing for the extrapolation of all housing stock back to 1851[20]. This allows for the re-evaluation of the stock of housing using the perpetual inventory method[21]. The houses from 1851 were depreciated at a rate of 1/50th of their constant 1938 value each year.

Using information of the Maltese government archives led to the realization that there was a significant difference in rental values between the rural and urban areas. In Malta, rent controls were being gradually introduced in this period: as a result, the public works department took a large survey of what was the state of rental housing in Malta[22]. By taking 93 reported cases of urban and rural dwellings, and by combining it with information already known from the housing construction estimates, it was possible to estimate that the yearly rental value of a house was 5% in the city and 3% in the country. The imputed rental income was less than 4% of the GDP of Malta and Cyprus throughout the whole period.

[20] Hart-Davis, *Census…* 1921 (1922); Malta, *Report of the Census…* 1931(1932)
[21] Depreciation of the stock of dwellings was undertaken to calculate the declining value of rent from depreciated houses.
[22] National Archives, Rabat. Public Works, File: PW534, PWD548

Appendix G: Detailed Methodology of Service Sector

The service sector was the most difficult sector to estimate, requiring the largest amounts of interpolation and inference. The service sector in Malta was the impact of the British navy presence: however, its impact cannot be measured directly as the expenditure of the British military is unknown. In addition the methodology of national income accounting, argues that "military personnel and civil servants, including diplomats employed abroad by another economic territory, are residents of the territory that employs them"[1]. Thus the wages of the British seamen and soldiers are to be included in the British and not the Maltese national accounts. In addition, the inclusion of British armed personnel wages in the national accounts of Malta would create double counting, as their expenditure in the Maltese economy is already accounted for in these estimates.

Trade and Transport:

It was difficult to estimate trade directly due to the lack of substantial private archives of merchants in Cyprus and Malta. Such archives could have provided information that would allow the estimation of shipping cost, domestic transport costs, as well as the trade mark-up on retail sales. Thus a different approach was implemented whereby products with known producer and retail prices had their prices compared in order to estimate a trade and transport mark-up[2]. This approach entails estimating the mark-up of the combined trade and transport of domestic tradable products and adding the value added of export, re-export and import trade. The mark-up multiplied by the volume of trade gives the gross output of trade and transport of goods. The intermediate consumption of both industries was estimated in order to arrive to value added. The value added of passenger transport was added to this by combining information on the value added of public transport companies[3].

The price mark up was based on price information in the statistical (blue) book. The average yearly retail prices of products deemed essential to British officials (which mainly constituted foodstuffs, fuel and alcohol) were recorded in Valletta and Nicosia, and reproduced in the blue books. Products were then matched with the producer prices of local manufacturers as well as the import price of such commodities. Information was much more extensive on agricultural products where it was

[1] For details see: United Nations, *National Accounts: A Practical Introduction* (New York, United Nations, 2003)
[2] Lequiller, *Understanding National Accounts* (2006) p.107
[3] United Nations, Department of International Economic and Social Affairs, *Handbook of National Accounting, Series F, No.39: Accounting for Production: Sources and Methods,* (New York: United Nations, 1986)

possible to estimate a relatively inclusive series of gross output in producer and retail prices of 1938 for Cyprus in order to estimate the mark up. The mark up ranged as an additional 22% to 27% on top of the output in factor prices, with an average for the period 1921-1938 of 25%. Thus the combined gross output of trade and transport was a 25% of gross output multiplied by the percentage of traded agricultural products. A similar, but more limited, process took place in Malta, leading to a trade and transport margin of agricultural retail sales at 20%.

The problem that arose from this method was that the amount of agricultural production grown for household consumption was not known. As Chapter 1 indicated, Cyprus and Malta were open economies, with a proportion of their farming community being committed to cash crop agriculture since the middle ages. The very high rate of urbanisation in Malta, with 80% of the population living in urban or sub-urban areas, combined with the lack of remote locations on the islands, indicates that farmers of Malta were in their majority integrated in the market through the agricultural middle men or *Pitkali*[4]. Thus, it was assumed that 70% of the gross output in agriculture was traded in Malta. In the case of Cyprus, the existence of very distinct agricultural zones (orange plantation around Morfou and Famagusta, grain production in Mesaoria, grape production on the Limassol side of the Trooodos mountains) would not have been possible if farmers did not trade with each other in order to explain the comparative advantage of their area. However, because of the existence of remote villages in Cyprus, particularly in the Troodos mountain range, a very conservative estimate of 50% of agricultural production was considered to be traded domestically.

There was not enough information to estimate the totality of the manufacturing output of Cyprus and Malta in bith producer and retail prices. Thus the post-war margin of trade and transport on the retail trade of manufacturing products was used as a reference, which was 25% for Cyprus[5]. This was revised downwards for Malta, based on the fact that the agricultural trade margin was lower than in Cyprus and on the descriptions of a much more competitive retail market[6]. It was considered that all the manufacturing products of Cyprus and Malta were traded.

[4] Frendo, "Everyday Life in 'British Malta'", (1996), p.44; Bowen-Jones, Dewdney, & Fisher, *Malta: Background for Development* (1961), p.333; Urbanization: Malta, *Census... 1931* (1932).
[5] Source: National Archives, Nicosia. File: V53/26 "Gross Output and Inputs – Indirect Taxes and Value Added in the Agricultural Sector during the Period 1959–1968" Vassiliou, *Input – Output Analysis…*(1959) p.69
[6] Greaves, *Report on Economic Conditions…*(1935), p.62.

The total amount of imports and exports were deflated to 1938 current prices. Two deflation method alternatives were considered:

a) used specific import and export deflators based on the largest items in terms of value for which yearly prices could be obtained.
b) used the consumer price index.

Unfortunately method a) was less desirable, exhibiting high volatility despite being the closest to best practice in methodology. This was due to the fact that the export value represented in the index was very limited as most products did not have yearly prices; thus just one or two main product prices, such as the price of imported kerosene, were enough to destabilise the index. In addition, the export and import prices included other costs which were unrelated to the price of the product such as duties and insurance quotes[7]. Smits, Horlings and Van Zanden argue that official import and export prices have no relation with actual market prices, leading to spurious outcomes[8]. Thus, deflation method b) was used, despite being methodologically less sound. As there was no indication of trade margins in foreign trade, the margin of 25% was assumed to be the trade and transport mark-up for both Malta and Cyprus.

The intermediate consumption as a share of total output was estimated separately for transport and trade on the basis of Cypriot post-war data; this intermediate consumption was considered to be similar for Malta. The shares of intermediate consumption to value added were estimated as 50% and 30% respectively[9]. The value added estimated is a combined estimate for trade and transport of traded goods. The share services was assumed that trade and transport had an equal share of the gross output; by removing the respective intermediate consumption, the estimate of goods trade and transport was completed.

Railways, Passenger Traffic and Communication

As tram and railways in Cyprus and Malta were government enterprises, there was substantial information available in the annual reports of the departments[10]. Such data included running costs, freight and passengers carried, total receipts, cost of wages and intermediate consumption and net

[7] As C.I.F. imports also include maritime insurance, it is fortunate that there were not enough data to estimate marine insurance as the estimation of trade would have led to some double counting of marine policies.
[8] Smits, J.P., Horlings. E., Van Zanden., J.L., *Dutch GDP and its Components, 1800-1913* (Groningen: Groningen Growth and Development Centre, 2000)
[9] Source: National Archives, Nicosia. File: V53/26 "Gross Output and Inputs – Indirect Taxes and Value Added in the Agricultural Sector During the Period 1959 – 1968" Vassiliou, *Input – Output Analysis…*(1959) p.69
[10] National archives, London. Files: CO161/120,121,122,123, 124 "Report of the railway department ", Malta, 1921 to 1938. Files: CO69/38, 40, 41, 42, 43, 44, 45, "Annual report of the railway department", Cyprus 1921 to 1938.

profit or loss. Both railways were narrow gauge and small, and by 1931 they were outdated and completely inappropriate for significant goods and passenger haulage[11]. The railways, particularly the Maltese railway, operated as a public good since the bankruptcy of the private company that constructed it in 1892; thus it was essential to estimate the value added through the sum of the railway's production costs as the prices charged were not considered to be representative of the value added created[12].

The Maltese railway operated solely on passenger traffic. As a result, the introduction of an extensive and efficient bus network during the interwar period to the redundancy of tram and rail operations, leading to their permanent closure in 1931. The Cypriot government railroad was operated with a small profit which was insufficient for the depreciation of capital. As a result, the railroad closed in 1951 as it could not cover the expense to overhaul its equipment[13].

The passenger traffic was more difficult to estimate. A benchmark for 1938 was estimated as a proportion of total goods transport and it was estimated as 15% of the value added of trade. The benchmark was extrapolated backwards on an index of road vehicles, in order to account for the increasing value added provided by the proliferation of motorised transport.

Postal and telephone services on the islands were government controlled; thus ample information sufficient to estimate for the value added was given in the annual reports of their respective departments. The postal department of Malta had sufficient information of yearly prices of inputs and outputs to create a annual series of value added. The output of the Maltese post was the only series where yearly intermediate consumption was also estimated, allowing for double deflation. There was no telephone department in Cyprus as all telephones were government controlled, and thus the value added of the service is included in government expenditure. Likewise, the Maltese radio which was diffused through cables was not estimated as it was not possible to find the accounts of the radio diffusion company[14]. Telegraph output was estimated based on the statistical (blue) book information, since the volume of telegraphs and their costs were provided. The share of value added to output was assumed similar to the one of the post office. There was no information on wireless services in order to be able to provide an estimate.

[11] Lavender, *The Story of*...(1962) p.60, Coase, A.S., "The Closing of the Malta Railway" *The Railway Magazine*, (July, 1934) www.maltarailway.com/history/rm1934.pdf as accessed 09/12/2008.
[12] Lequiller, & Blades, *Understanding National Accounts* (2006), p.105.
[13] Hadjilyra, A.M., *The Cyprus Government Railway*, (2006), p.12
[14] Bonnici, & Cassar, *A Chronicle of Twentieth Century Malta*, (2004), p.134

Financial Services

It was only possible to have a direct estimate of output for the Cypriot banking sector. The direct estimate was based on the output approach of the United Nations and the OECD[15]. Output is estimated differently for banks since their output is achieved by borrowing money at low interest and lending it at higher interest rates. Thus the output of banking is estimated as the difference between the interest received and the interest paid. The sector was divided in three sub-sectors in Cyprus: the formal banking sector, saving banks and the co-operative credit societies. The formal banking sector was estimated using information in the blue books and in the archives of the Ionian Bank. The Cyprus Blue books provided the total deposits in foreign and domestic banks in each year. The interwar period displayed a great increase in the total deposits of the island: from 1921 to 1938, deposits increased by a factor of 5.28. However it was not known how these deposits were distributed, how many of the accounts were accruing interest, and what was the average interest rate. Thus a collection of interest rates was collected from the statistical (blue) books, the Ionian Bank archives of the Cyprus branch and the interest rates given to the government by the Ottoman Bank[16]. This allowed for an estimate of the average interest demanded for the period 1930-1938. The average interest given for deposits was 3%, which was based on the saving rate of the government registered saving banks. Thus the yearly interest differential was estimated for the period 1930-1938: this ranged from as low to 2% to as high as 5%. It was not possible to estimate the yearly interest differential for the period 1921-1929; thus it was assumed that the interest differential was 3%, which was the average of the interest differential of the period for which we have sufficient data. The interest rate differential was multiplied by the total deposits in order to estimate the gross output of the formal banking sector.

The intermediate output was estimated based on a report of the working expenses of the Cypriot branches of the Ionian bank in 1929[17]. Working expenses (without the inclusion of wage cost, as wages are part of value added) were subtracted by the gross output of the Ionian Bank in 1929 in order to a share of value added to gross output; this was assumed constant for all years and

[15] Laquiller, F. & Blades, D., *Understanding National Accounts*, (Paris: OECD, 2007), pp.105-106; United Nations, Economic and Social Affairs, *Handbook of National Accounting, Series F, No.85: National Accounts: A Practical Introduction*, (New York: United Nations, 2003) p.32

[16] British Library of Political and Economic Science Archive, Ionian Bank Papers, File: 6/79

[17] Lending rates were a constant 3% above the base rate. Source: British Library of Political and Economic Science Archive, Ionian Bank Papers, File: 6/64 Luard to Court of Governors, 12th Jan, 1927; File 6/100 General Manager to Chairman, 18th December 1929.

representative for all formal banking institutions, allowing the conversion of the gross output to value added.

The saving banks were a small section of the banking sector, providing less than 1% of the sector's value added. Their deposits were known and their value added was estimated in a similar way as above, but using a smaller interest differential as they were more conservative institutions.

The deposits of the co-operative saving banks were estimated for certain benchmark years (1938, 1928, 1923, 1922 and 1921) when such information was provided in the statistical (blue) books. The number of co-operative credit societies expanded rapidly during this period and so did their deposits. The output for the benchmark years is estimated as described for the formal banking sector. This enabled a comparison of the value added of the co-operative sector with the value added to the formal banking sector value added for the benchmark years. This proportion was then log-linearly interpolated for the years when no information was available, and the interpolated proportion was multiplied by the value added of formal banking sector to estimate the value added of the co-operative banking sector in the years between the benchmarks.

In Malta the only information available was occupational data. The output of the financial sector was estimated on the basis of the wage bill as described in the estimation of personal services below. No estimates of insurance output were possible for either island.

Personal and Professional services; other services

The estimation of this section of the service industry took place under severe data limitations. The only information available was the number of persons who stated a professional service (such as lawyers and doctors), or a service work (such as cycle fitters, entertainers and painters) and domestic services (such as domestic servants or cooks). Such information is only given in the censuses of Malta and Cyprus. In such difficult data conditions, HNA specialists resort to the only possible way forward, by using linear interpolation of occupations to estimate output[18]. Thus the number of persons in service occupation was linearly interpolated for the in-between census years. These were separated in their respective codes, provided by the Nace.Rev.2 nomenclature[19]. The table below gives the range of service occupations included for Cyprus and Malta.

[18] Hjerppe, R., *Finland's Historical National Accounts 1860 - 1994: Calculation Methods and Statistical Tables* (Helsinki: Bank of Finland, 1996) p.14
[19] Eurostat, *NACE Rev.2: Statistical Classification of Economic Activity* (Luxembourg: Eurostat, 2008)

Table A.18: Service sector occupations estimated using census occupation statistics.

	Cyprus	Malta
Miscellaneous Service Work	cycle fitters, electricians, watch repairers, upholsterers, photographers, water carriers, editors, authors, journalists, artists, sculptors, poets, owners / managers of theatres and picture theatres, actors, actresses, dancers, musicians, restaurant keepers, hotel / inn keepers, café proprietors, barbers, bath keepers, shoe blacks, prostitutes	electricians, hotel / inn keepers, lodging / boardinghouse keepers, coffee / eatinghouse keepers, photographers, guides, watchmen, auctioneers / weighers, sculptors, painters, draughtsman, image makers, musicians, cinema proprietors, librarians, prostitutes, bankers, waiters,
Professional service	clergymen, church attendants, nuns, lawyers, petition writers, certifying officers, physicians, surgeons, bone setters, vets, animal castrators, dentists, oculists, midwives, nurses, mental asylum attendants, chemists, apothecaries, professors, teachers, engineers, architects, music teachers	chemists, lawyers, engineers, architects, vets, physicians, dentists, occultists, midwifes, nurses, other medical attendants, teachers, clergymen, church attendants, nuns,
Domestic and personal services	chauffeurs, domestic servants, cooks,	servants, chauffeurs, cooks, launderers, housemen

Source: Hart-Davis, *Cyprus... Census of 1921* (1922); Hart-Davis, *Cyprus... Census of 1931* (1932); Percival, *Cyprus, Census... 1946* (1947); Malta, *Eleventh Census... 1949* (1949); Malta, *Census... 1931* (1932); Malta, *Report... Census of the Maltese Islands 1921* (1922)

The occupations were multiplied with the yearly wages of 1938 to get the value added for their services. The wages of 1938 were based on the wages provided in the 1938 statistical (blue) books, and annualised based on information on the days of rest and of festivities in Cyprus and Malta[20]. The books provided wage information for a limited range of occupations and provided separate wage rates for women and children. The census occupation statistics were thus separated to women and men and multiplied by their respective wage. For domestic services, the cost of food and lodging was included to the wage since the wage provided by the statistical (blue) books did not include such costs. For the wages of other occupations not provided by the statistical (blue) books, their wage was estimated by benchmarking their profession on the basis of a profession with a known wage (such as assuming that a motor mechanic was earning 200% more than railroad

[20] Bowen-Jones, Dewdney & Fisher, *Malta: Background for Development*, (1961); Surridge, *A Survey of Rural Life*... (1930)

workers), or by finding the government wage for that profession (such as assuming that a certifying officer earns as much as a 4th class government clerk).

In order to remove double counting, the government employees were removed from their occupation in order not to count their value added in both government and service industries. For example, the number of government engineers working in the public works department was removed from the persons occupied as engineers in the service sector.

Public Administration

The government sector's value added was based on the detailed government expenditure per department in the statistical (blue) books. The information enabled one to break down government expenditure in personal emoluments from other expenditure. Yet the personal emoluments did not equal the value added of the total government sector; thus the expenditure on the public debt charge and the cost of pensions were included to estimate the value added of the sector in current prices. Due to the lack of sufficient price data, the government value added was deflated using the consumer price index as there are no other prices available. Government doctors and teachers were not included in the government sector but in the relevant sectors of health and education[21].

[21] United Nations, *National Accounts…* (2003) pp.43-48

Appendix H: Detailed Methodology of Consumer Price Index (CPI) and international comparisons.

The objective of a consumer price index is to track the changes in the prices affecting the purchases of households. In order to construct it, one needs to find a representative cross section of the target society, and record their spending patterns through a budget enquiry for a base year. The enquiry enables one to get the average expenditure pattern on items spent by a group in a way that is representative of the whole society. Then prices of the items are measured each year; the quantities purchased are those that were purchased in the base year and the weigh they carry in the total index is determined through the budget survey.

There were three possible studies which could have been used as the basis of a CPI: the Cypriot statistical (blue) book of 1946, a study reconstructing the Cypriot CPI in modern basis in 1949, a study on the living conditions of Maltese labourers in 1938 and a study on the calories consumed by Maltese families, also in 1938[1].

The consumer price index was mainly based on the report on constructing a cost of living index in Cyprus in 1949, but with information from Malta used to alter some product weights on the Maltese CPI. The Cypriot report was preferred over the others as it provided detailed information on the weight of each individual product in the Cypriot basket, while the other sources were less precise and focused almost exclusively on foodstuffs. In addition, the 1949 index provides the advantage of creating a CPI that will be compatible in methodology with the estimates of CPI of Malta and Cyprus after the Second World War, enabling the CPI to be extended forwards.

The CPI has five general price categories: rent, food, tobacco / alcohol, fuel / light, clothing and other. The weight of each category in the final index is shown below. There was no price information for articles of clothing in Malta. As a result of the lack of information, it was decided to share the weight of clothing to fuel / light and other items.

[1]Cyprus, *Statistical (Blue) Book 1946*, (Nicosia: GPO, 1947); Reddway. W., *Recommendations about the Cost of Living Index for Cyprus* (Nicosia: GPO, 1950); National Archives, London. File: CO161/124 "Report of the Commissioner for Labour for 1937-1938", p. 131; National Archives, Rabat. File: GMR 1368, "Report of the Commission Approved to Inquire and Report on the Question of Nutrition in Malta & Gozo" Appendix A & B.

Table A.19: Weights of the Maltese and Cypriot CPI.

	Cyprus	Malta
Rent	16	16
Food	49	49
Tobacco and Alcohol	11.8	11.8
Fuel and Light	4.4	9.4
Clothing	10	N/A
Other Items	8.8	13.8

Source: Reddway, *Recommendations about the Cost of Living...* (1950) p.4

Within these categories the prices of items were collected: the items and their categories are shown below[2]. Care was taken for items that were in consumption by the population and not for the British expatriate market.

Table A.20: Items included in the CPI of Malta and Cyprus

	Cyprus	Malta
	Items	Items
Food	cheese, salt, mutton, flour (wheat), sugar, rice, bread, potatoes, eggs, milk, olive oil, french beans, cow peas, broad-beans,	wheaten bread, English cheese (English), Maltese cheese, eggs, milk, beef, mutton, pork, rice, sugar, salt, potatoes, beans
Tobacco and Alcohol	brandy, wine	wine (common), brandy (local), beer, tobacco (local)
Fuel and Light	kerozene, tobacco, wood (for fuel), charcoal	kerozene, firewood kindling, firewood,
Clothing	shoes, cloth (for one shirt), hosiery	N/A
Other Items	soap, coffee, boot cream	coffee, tea, soap

Sources: Cyprus, Statistical (Blue) Books, 1921-1938; Malta, Statistical (Blue) Books 1921-1938.

The yearly prices of these products were divided by the base year of 1938 in order to arrive at an index for each product. The products were then bundled in the six categories and the change of prices averaged within the subcategory. The subcategories were then multiplied by the weights given in Table A.20 and summed in order to create the unified CPI with a base year of 1938. The CPI of Malta and Cyprus is presented below. It is encouraging that the downward trend is very similar to both Malta and Cyprus, since they were estimated independently. There was a sharp deflation throughout the period: the British attempt to join the gold standard at its pre-war level led to rapid deflation in the 1920, while the decline in prices during the depression meant that inflation was only present in the period of recovery of 1934-1938.

[2] The rent values for Cyprus and Malta were based on the research for the estimation of construction and the implied rental income, explained in detail in Appendix F. It was not possible to estimate the rent values for all years, but only for some years. It was seen that the Cypriot rent increased at approximately 2.5% per annum. In Malta it was more difficult to estimate after rent control was imposed in 1924; thus it was assumed that rent remained constant after rent control, but increased at a rate of 2% per annum prior to its imposition.

Table A.21: Cyprus and Malta CPI, 1921-1938 (1938=100).

	Cyprus	Malta
1921	163.2	143.2
1922	141.7	128.9
1923	133.7	128.1
1924	136.1	123.8
1925	136.5	116.5
1926	141.5	120.4
1927	144.0	119.2
1928	140.6	114.6
1929	118.8	104.5
1930	107.0	104.3
1931	105.7	98.8
1932	104.3	100.9
1933	101.8	103.8
1934	98.9	97.0
1935	97.1	99.0
1936	100.2	97.6
1937	101.2	99.2
1938	100.0	100.0

Sources: Cyprus, Statistical (Blue) Books, 1921-1938
Malta, Statistical (Blue) Books, 1921-1938

International Comparisons

In chapter 3 the GDP of Cyprus and Malta have been compared to each other using constant 1938, PPP sterling. However as Maltese prices are not representative of British prices, a different approach was needed to convert the estimates into international comparable currency units. The approach presented below represents the best possible at present, but this is far from ideal as it suffers from significant index number problems. More research is needed to establish a unified price index for the period 1921-2005 before a definitive estimate in international comparative currencies can be achieved.

Using a diverse mix of price indexes it was possible to convert the Cypriot GDP for the period 1921-1938, which was originally estimated in 1938 constant Cyprus pounds, to 1950 constant Cyprus pounds, which is the benchmark of the first GDP estimates of Cyprus. In order for this to be achieved a unified price series was constructed using diverse evidence of period 1938-1950.

There were several price indices constructed in this period. A commission was established in 1950 in order to create a cost of living index that was more representative of the needs of government

officials. The commission constructed a cost of living index for the period 1939-1944, shown in table A.22.

Table A.22: The Reddway commission COLA, Cyprus, 1939-1944 (1939=100)

Date	Index	Date	Index
August 1939	100	August 1942	219
May 1941	133	October 1942	235
October 1941	181	January 1944	240

Source: Reddway. W., *Recommendations about the Cost of Living Index for Cyprus* (Nicosia: GPO, 1950)

The next price index was reported in the government gazette, as shown in Table A.23. Unlike the Reddway commission, nothing is known about the basket of goods that was used to construct this cost of living index. In addition the benchmark year is given as 1938/1939, making it difficult to evaluate if the starting date is the same as the starting date of the cost of living index presented in Table A.21. The government gazette of 1950 began a new price index with a benchmark year of 1950, which was based on the national accounts that were about to be constructed for the island.

Table A.23: Government Gazette COLAs, Cyprus, 1948-1950

Government Gazette 1948 and 1949 (1938-1939=100)	
Year	12 month Average index
1948	337.08
1949	324.08
Government Gazette 1950 (Jan 1950=100)	
December	
1950	107

Source: Government Gazette 1949, MP298/1949 issue no.43, "Cost of living index"; PIO newspaper archive, Cyprus: Government Gazette Collection, Government gazette volume.1950, p.654 "retail price index".

The main issue of all the price indexes is that the inflation of 1938-1939 and of 1949-1950 was unknown. No other price data is available, and any further research needs to focus on these two main data gap in price data. Thus three assumptions were suggested:

a) It was assumed that there was no inflation in 1939, and 1949-1950.
b) It was assumed that there was no inflation in 1939, and that inflation in 1949-1950 equalled the inflation of 1950-1951 which was 7%.
c) It was assumed that there was a deflation of 7% in 1949-1950.

The price indexes were used to reflate the GDP in constant 1938 Cyprus pounds prices to GDP in constant 1950 pounds. The Cypriot GDP of 1950 in constant 1950 prices has been calculated in international comparison currencies by the total economy database (1990 Gheary-Khamis $) and the Penn world tables

(2005 international $)[3]. Thus GDP of Cyprus for the period 1921-1938 has been estimated in both these international units, and using the PPP of Cypriot estimates to Maltese sterling the Maltese GDP was derived. The estimates under assumption B (no inflation in 1939 and 7% inflation in 1951) was chosen as the growth rate for the period 1938-1950 was much more in line with the qualitative description of the islands development at that period. They are presented in the table A.24. Although this procedure has many problems, and it would be unsuitable if more price information is unearthed, it is the best possible under the present data conditions.

[3] Heston, A., Summers, R. & Aten, B., "The International Comparison of Prices Program (ICP), Version 6.3" *Penn World Tables* (Pennsylvania, PA: CICUP, 2009); The Conference Board and Groningen Growth and Development Centre, *Total Economy Database*, http://www.conference-board.org/economics as consulted 30 Feb 2010

Table A.24: Per capita GDP of Cyprus and Malta, 1921-2008

Unit Year	GDP per capita I$ 2005 Cyprus	GDP per capita I$ 2005 Malta	GDP per capita G-K $ 1990 Cyprus	GDP per capita G-K $ 1990 Malta
1921	1,219	1,269	891	928
1922	1,293	1,357	945	992
1923	1,318	1,423	963	1,040
1924	1,273	1,518	930	1,110
1925	1,356	1,534	991	1,121
1926	1,287	1,563	941	1,142
1927	1,428	1,550	1,044	1,133
1928	1,381	1,474	1,009	1,077
1929	1,549	1,571	1,132	1,149
1930	1,449	1,532	1,059	1,120
1931	1,343	1,546	982	1,130
1932	1,208	1,570	883	1,148
1933	1,193	1,595	872	1,165
1934	1,318	1,613	963	1,179
1935	1,449	1,678	1,059	1,227
1936	1,402	1,542	1,025	1,127
1937	1,639	1,633	1,198	1,193
1938	1,693	1,588	1,238	1,160
1939	.	.	.	.
1940	.	.	.	.
1941	.	.	.	.
1942	.	.	.	.
1943	.	.	.	.
1944	.	.	.	.
1945	.	.	.	.
1946	.	.	.	.
1947	.	.	.	.
1948	.	.	.	.
1949	.	.	.	.
1950	2,576	.	1,883	891
1951	2,644	.	1,814	929
1952	2,875	.	1,969	964
1953	3,190	.	2,136	1,007
1954	3,478	.	2,144	1,045
1955	3,628	.	2,192	1,094
1956	3,963	.	2,406	1,218
1957	4,060	.	2,510	1,215
1958	3,382	.	2,387	1,278
1959	3,564	.	2,489	1,291
1960	3,313	.	2,280	1,350
1961	3,641	.	2,508	1,338
1962	4,219	.	2,746	1,281
1963	4,317	.	2,885	1,283
1964	3,694	.	2,590	1,328
1965	4,596	.	3,146	1,439
1966	4,849	.	3,315	1,603
1967	5,385	.	3,738	1,709
1968	5,630	.	3,878	1,876
1969	6,279	.	4,204	1,975
1970	6,303	4,157	4,297	2,206
1971	6,884	4,015	4,806	2,261
1972	7,142	4,124	5,070	2,438
1973	7,193	4,607	5,059	2,657
1974	5,613	5,015	4,230	2,938

1975	4,707	5,303	3,656	3,503
1976	5,797	6,306	4,482	4,123
1977	7,323	7,032	5,278	4,635
1978	8,157	7,846	5,752	5,088
1979	8,967	8,672	6,382	5,564
1980	9,492	8,902	6,807	5,735
1981	9,450	9,268	7,332	5,897
1982	9,836	9,651	7,715	5,960
1983	10,204	9,620	8,029	6,194
1984	11,116	9,749	8,618	6,318
1985	11,309	9,982	8,856	6,553
1986	11,402	10,421	8,477	6,810
1987	12,154	10,808	8,387	7,149
1988	13,485	11,676	9,167	7,574
1989	14,646	12,380	9,877	8,034
1990	15,196	13,124	9,762	8,318
1991	14,991	13,827	9,656	8,722
1992	16,159	14,231	10,391	9,344
1993	15,530	14,856	10,296	9,606
1994	16,468	15,743	10,784	9,947
1995	17,677	16,315	11,750	10,541
1996	17,814	16,586	11,879	10,868
1997	17,885	17,268	12,075	11,312
1998	18,673	17,914	12,597	11,612
1999	19,238	18,616	13,123	11,985
2000	20,275	19,442	13,699	11,816
2001	20,756	18,496	14,161	11,567
2002	21,267	18,587	14,375	11,821
2003	21,427	18,700	14,567	11,735
2004	22,550	18,716	15,095	11,820
2005	23,219	19,553	15,607	12,187
2006	24,075	20,094	16,167	12,527
2007	25,141	20,983	16,797	12,937
2008	.	.	17,320	13,190

Note: in Gheary-Khamis 1990$ and international 2005$. Source: Heston, A., Summers, R. & Aten, B., "The International Comparison of Prices Program (ICP), Version 6.3" *Penn World Tables* (Pennsylvania, PA: CICUP, 2009); The Conference Board and Groningen Growth and Development Centre, *Total Economy Database*, http://www.conference-board.org/economics as consulted 30 Feb 2010.

Appendix I: Maps of Cyprus and Malta

Ordnance Survey Map of Cyprus, 1915

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Source: Hadjilyra, *The Cyprus Government Railway* (2006)

Modern Relief Map of Malta

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Source: http://www.reisenett.no/map_collection/europe/Malta.GIF as consulted 17 Dec 2009